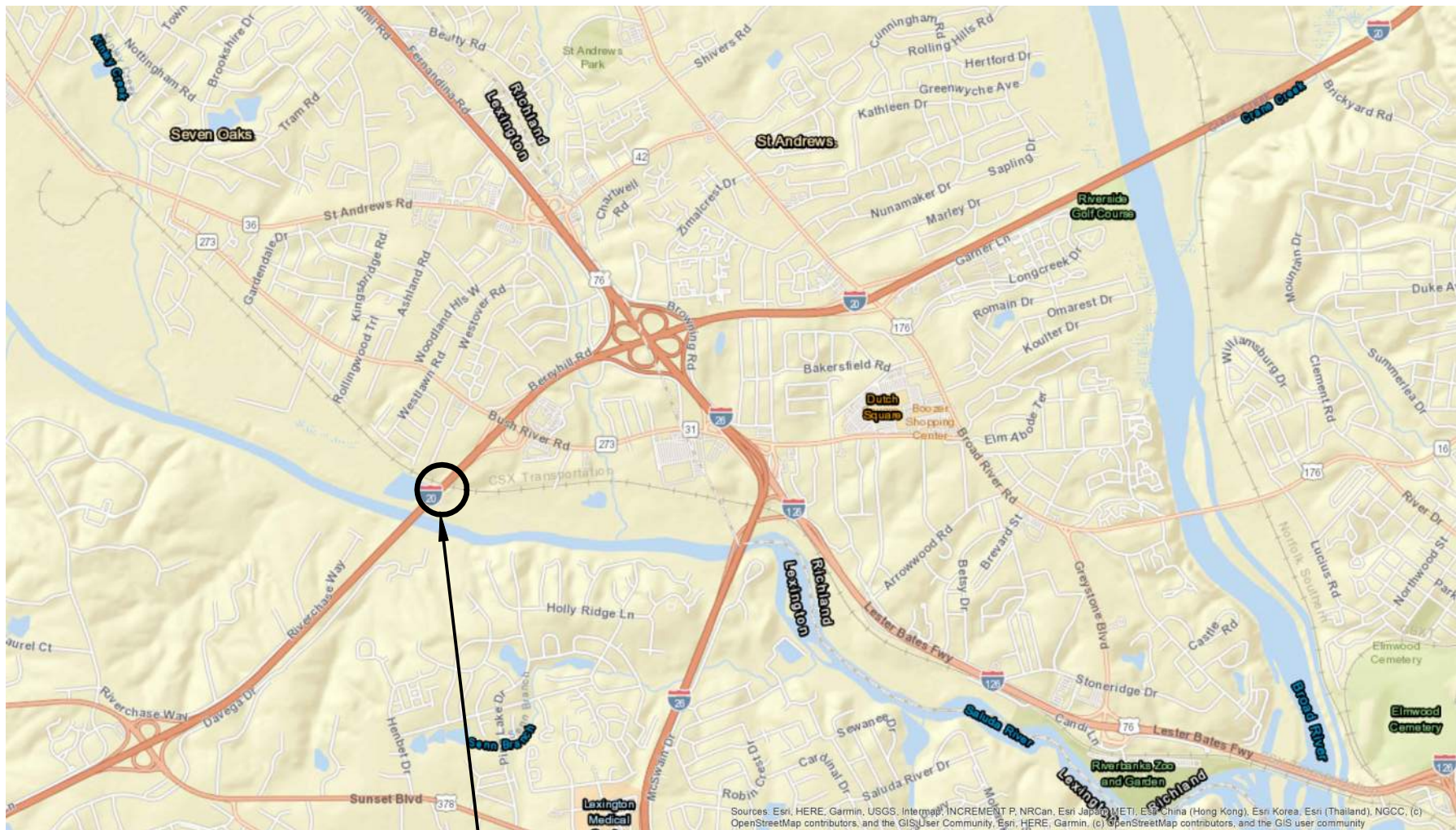
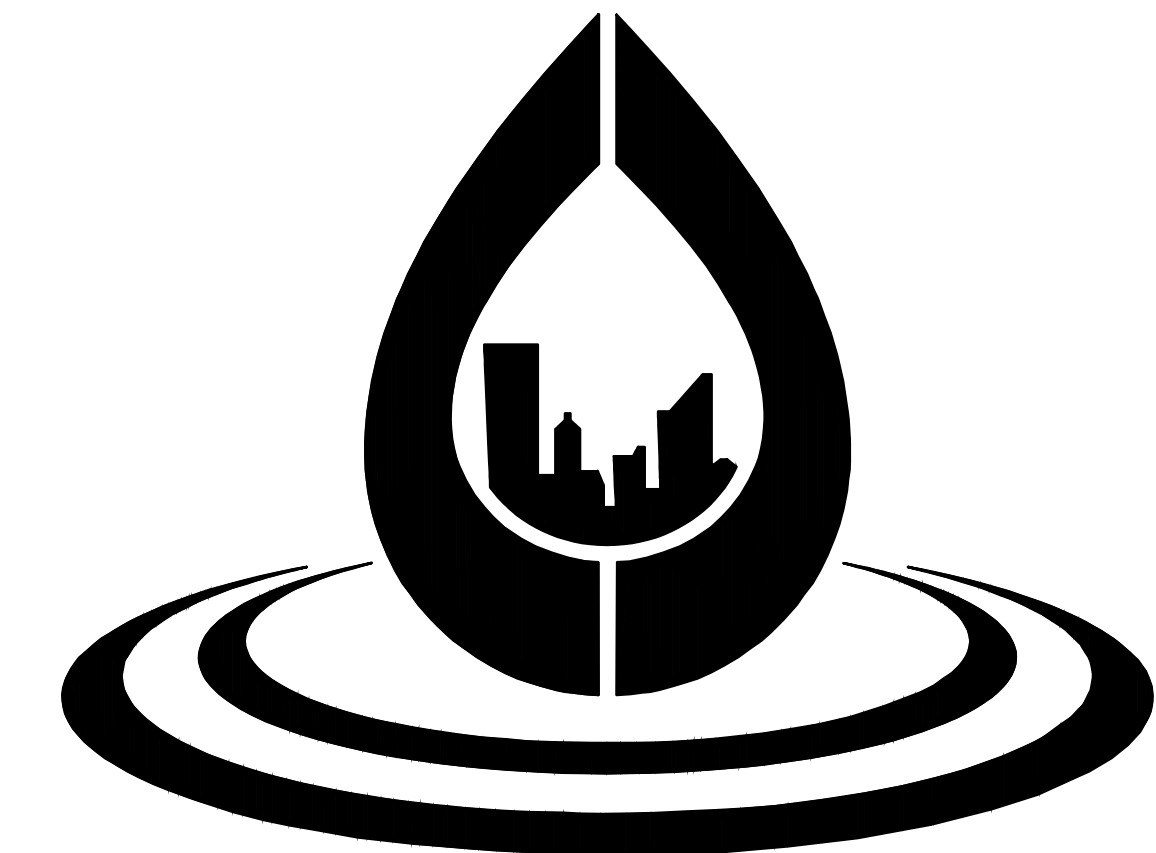


30" FORCE MAIN RELOCATION UNDER I-20 AT CSX RAILROAD CAROLINA CROSSROADS PHASE 3C

PRELIMINARY 90% DESIGN
OCTOBER 2024

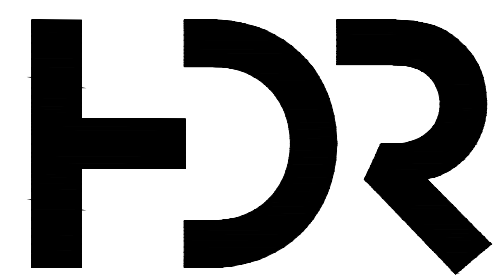


PROJECT LOCATION



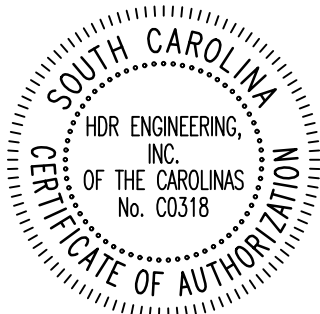
Columbia
Water

CITY OF COLUMBIA



HDR Engineering, Inc.
of the Carolinas

1201 Main St., Suite 800
Columbia, SC 29201



CITY MANAGER
TERESA B. WILSON

DIRECTOR OF ENGINEERING
DANA R. HIGGINS, P.E.

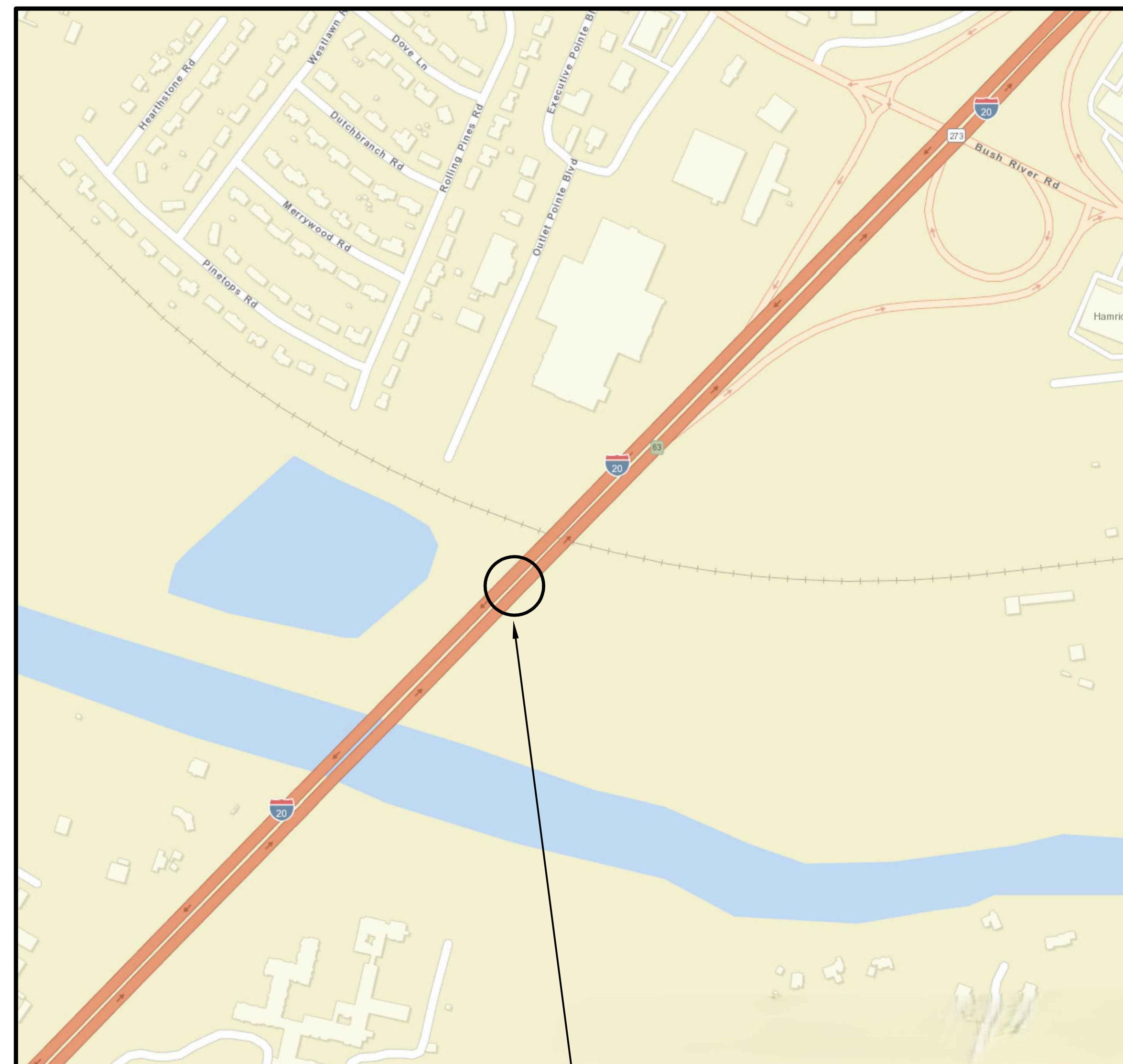
CITY COUNCIL
EDWARD H. McDOWELL, JR.
WILL BRENNAN
DR. ADITI BUSSELLS
TINA A. HERBERT
PETER M. BROWN
TYLER D. BAILEY

MAYOR
DANIEL J. RICKENMANN

SHEET NO:
00G-100

COVER SHEET 1		
00G-101 SHEET 2		VICINITY MAP AND GENERAL NOTES
01C-100 SHEET 3		PLAN AND PROFILE OF NEW 30" FORCE MAIN STA 0+00 TO STA 5+31
02C-100 SHEET 4		DETAILS 1
02C-101 SHEET 5		DETAILS 2
02C-102 SHEET 6		DETAILS 3
03C-100 SHEET 7		CCR TC07 TRAFFIC CONTROL PLANS
03C-101 SHEET 8		CCR TC08 TRAFFIC CONTROL PLANS
03C-102 SHEET 9		CCR TC09 TRAFFIC CONTROL PLANS
03C-103 SHEET 10		CCR TC10 TRAFFIC CONTROL PLANS
03C-104 SHEET 11		CCR TC11 TRAFFIC CONTROL PLANS
03C-105 SHEET 12		CCR TC12 TRAFFIC CONTROL PLANS
03C-106 SHEET 13		CCR TC13 TRAFFIC CONTROL PLANS

SCALE: NTS



— PROJECT LOCATION

1. SURVEY WAS PERFORMED BY INDEPENDENT MAPPING CONSULTANTS, DATED DECEMBER 2009. COORDINATES ARE BASED ON STATE PLANE NAD83 (2007 ADJUSTMENT), NAVD88.
2. LOCATION OF ALL UTILITIES ARE APPROXIMATE. CONTRACTOR IS TO FIELD DETERMINE THE LOCATIONS OF ALL EXISTING UNDERGROUND UTILITIES, FOR SPECIFIC LOCATION BEFORE DIGGING. CALL PALMETTO UTILITY PROTECTION SERVICE @ 1-888-771-8882 AT LEAST 72 HOURS BEFORE DIGGING. CONTRACTOR SHALL VERIFY DEPTHS OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
3. ALL PROPERTIES DISTURBED DURING, OR AS A RESULT OF CONSTRUCTION, SHALL BE RESTORED TO THEIR PRE-EXISTING OR BETTER CONDITION.
4. INSTALLATION OF ALL PIPES SHALL BE IN ACCORDANCE WITH SCDOT SPECIFICATIONS, LATEST ED., CITY OF COLUMBIA STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
5. THE CONTRACTOR SHALL NOTIFY PROPERTY OWNERS, IN WRITING, AT LEAST SEVEN (7) BUSINESS DAYS PRIOR TO ANY INCONVENIENCE OR DISRUPTION OF SERVICES AS A RESULT OF CONSTRUCTION.
6. THE CONTRACTOR SHALL FULLY COMPLY WITH THE CITY OF COLUMBIA SEDIMENT AND EROSION CONTROL ORDINANCE.
7. PIPE IS TO BE DEFLECTED IN THE FIELD TO ACCOMMODATE THE PROPOSED ROUTE BOTH HORIZONTALLY AND VERTICALLY TO MAINTAIN A MINIMUM COVER AND CLEARANCES. ANY BENDS TO BE MADE BY DEFLECTIONS UNLESS OTHERWISE NOTED. THE DEFLECTION AT INSTALLATION SHALL NOT EXCEED HALF OF THE MAXIMUM RECOMMENDED DEFLECTION PER JOINT OF PIPE AS SPECIFIED BY THE MANUFACTURER.
8. THE CONTRACTOR SHALL FULLY COMPLY WITH SCDOT ENCRoACHMENT PERMIT

COM	COMMUNICATIONS CABLE OR CONDUIT
EX	EXISTING
FM	FORCE MAIN
LF	LINEAR FEET
PROP	PROPOSED
RJ	RESTRAINED JOINT
SD	STORM DRAIN PIPE
SF	SILT FENCE



PROJECT

30" FORCE MAIN RELOCATION UNDER I-20

B	10/2024	90% DESIGN
A	08/2024	60% DESIGN
MARK	DATE	DESCRIPTION

HDR PROJECT NUMBER	10207730
PROJECT MANAGER	RAVEN GAMBRELL, PE
CIVIL ENGINEER	MATTHEW SHULTZ, PE
DRAWN BY	JIM KROOSWYK

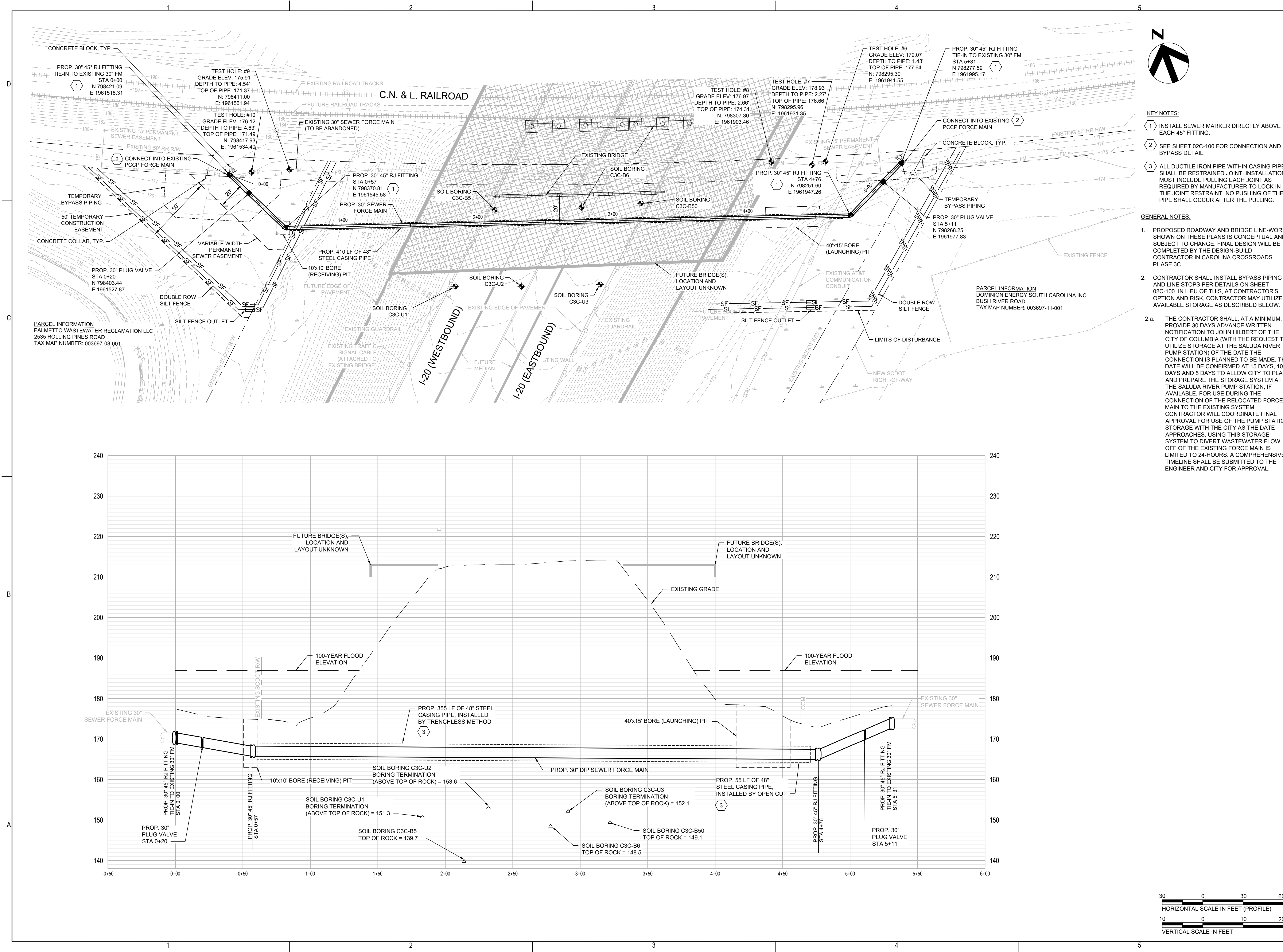
A circular professional engineer seal for the State of South Carolina. The outer ring contains the text "SOUTH CAROLINA" at the top and "CERTIFICATE OF AUTHORIZATION" at the bottom, separated by small dots. The inner circle contains the text "HDR ENGINEERING, INC." and "OF THE CAROLINAS" on the top line, and "No. 00318" on the bottom line.

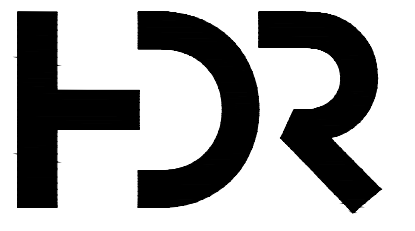
PRELIMINARY

SHEET NAME


VICINITY MAP AND
GENERAL NOTES

00G-101
SHEET 2 OF 13





OWNER



DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

PROJECT

30" FORCE MAIN RELOCATION UNDER I-20

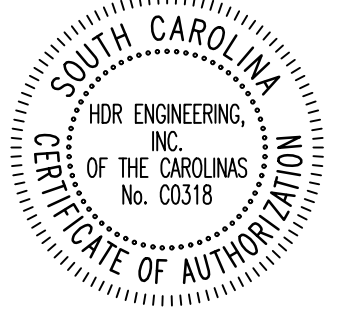
REVISION

MARK	DATE	DESCRIPTION
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HDR DRAWING INFORMATION

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CORPORATE SEAL



ENGINEER SEAL

PRELIMINARY

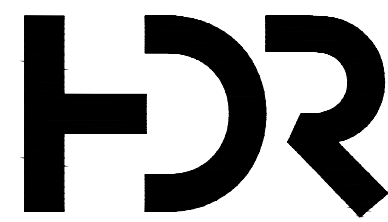
SCALE H: 1" = 30'
V: 1" = 10'

SHEET NAME

PLAN AND PROFILE OF NEW 30" FORCE MAIN STA 0+00 - STA 5+31

SHEET NUMBER

01C-100
SHEET 3 OF 13



OWNER



DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

PROJECT

30" FORCE MAIN RELOCATION UNDER I-20

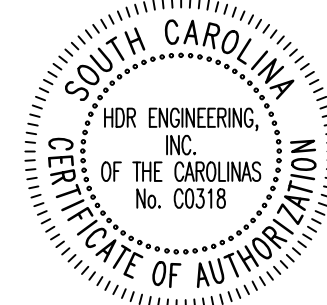
REVISION

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CORPORATE SEAL



ENGINEER SEAL

PRELIMINARY

SCALE NTS

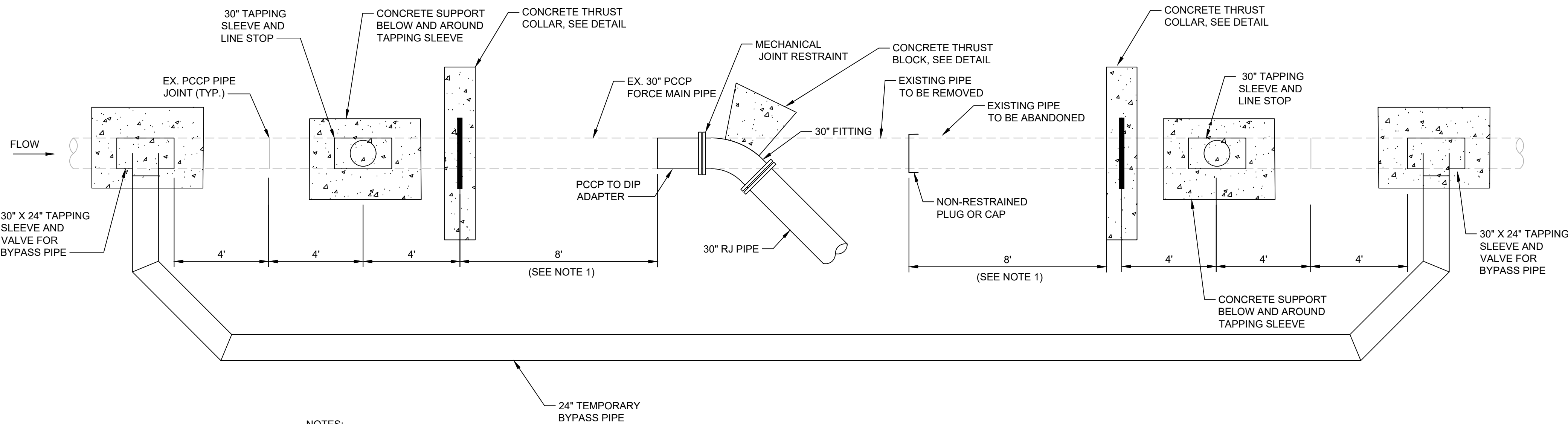
SHEET NAME

DETAILS 1

SHEET NUMBER

02C-100

SHEET 4 OF 13



NOTES:

- DO NOT DISTURB SOIL BELOW TOP OF PIPE WITHIN 10' OF THE CONCRETE THRUST BLOCK. IF DISTURBED, SOIL SHALL BE REPLACED WITH SUITABLE MATERIAL AND COMPACTED TO 100%.

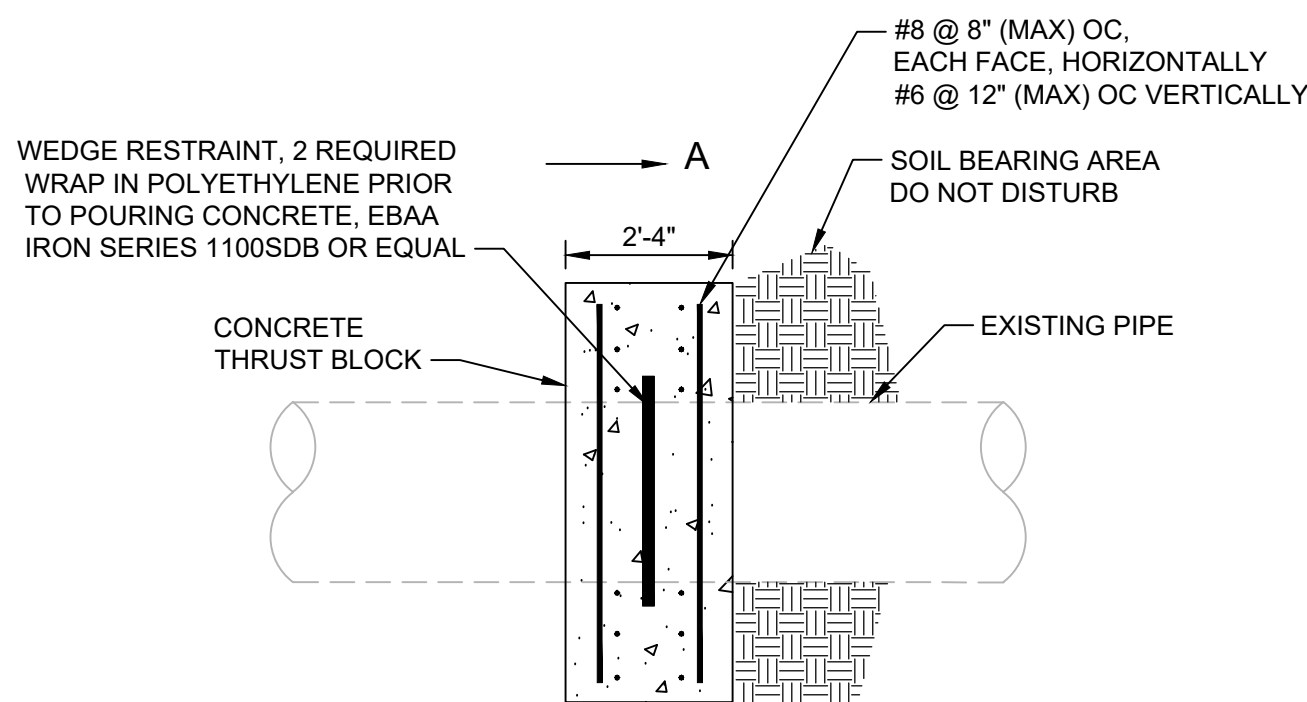
SEQUENCE OF CONSTRUCTION

THE FOLLOWING IS A GENERAL SEQUENCE OF CONSTRUCTION, NOT ALL STEPS ARE INCLUDED, CONTRACTOR IS FULLY RESPONSIBLE FOR PLANNING AND EXECUTING ALL WORK REQUIRED FOR A COMPLETE AND APPROVED INSTALLATION.

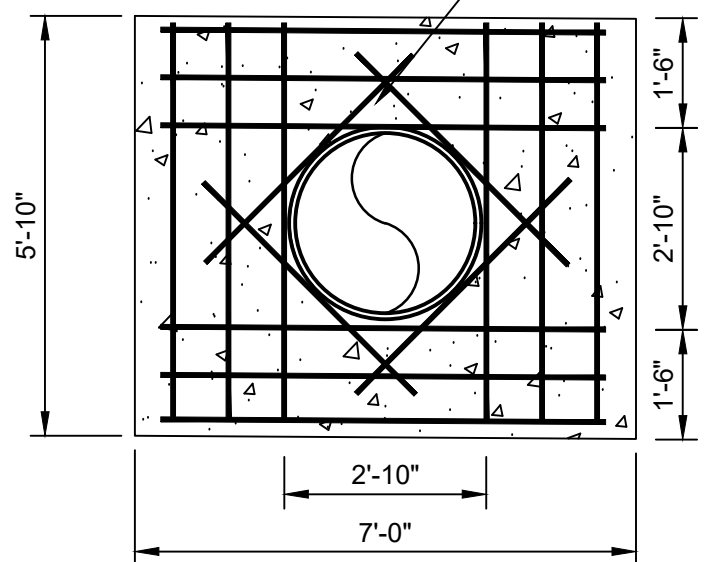
- EXPOSE EXISTING PIPE TO FIND NEAREST JOINTS AT PROPOSED CONNECTION POINTS.
- CHIP GROUT OUT AROUND TOP OF JOINTS TO DETERMINE PIPE MATERIAL, PIPE OUTSIDE DIAMETER, JOINT TYPE AND IF CONNECTION WILL BE MADE INTO BELL OR SPIGOT END.
- ORDER APPROPRIATE TRANSITION ADAPTERS TO CONNECT PROPOSED DIP TO EXISTING PCCP.
- INSTALL AND TEST NEW FORCE MAIN SECTION. SECTION SHALL INCLUDE ALL PIPE AND FITTINGS WITHIN 10' OF THE CONNECTION POINT AT EACH END. FURNISH WATER FOR TESTING AND INSTALL TEMPORARY TAPS AS NEEDED TO FILL PIPE SECTION WITH WATER AND VENT AIR.
- RECEIVE OWNER'S APPROVAL OF THE NEW FORCE MAIN SECTION.
- RECEIVE ALL REQUIRED TRANSITION ADAPTERS, FITTINGS, SLEEVES, PIPE SECTIONS, ETC. REQUIRED TO MAKE CONNECTIONS AT BOTH ENDS BETWEEN NEW FORCE MAIN AND EXISTING FORCE MAIN.
- EXCAVATE AND EXPOSE EXISTING PIPE AS NEEDED TO INSTALL BYPASS SYSTEM AND MAKE CONNECTIONS.
- INSTALL BYPASS TAPPING SLEEVES AND ENCASE IN CONCRETE TO PROTECT EXISTING PIPE AND SUPPORT WEIGHT OF TAPPING MACHINE.
- CONSTRUCT CONCRETE THRUST BLOCKS AND ALLOW CONCRETE TO CURE.
- INSTALL BYPASS PIPING AND PRESSURE TEST TO 150 PSI. FOLLOWING OWNER'S APPROVAL, BEGIN BYPASS.
- TAP INTO EXISTING PIPE SECTION AT CONNECTION POINTS TO REMOVE ALL WASTEWATER BETWEEN LINE-STOPS AND PROPERLY DISPOSE.
- CAREFULLY REMOVE SECTION OF EXISTING PIPE, PROTECT EXISTING PIPE ENDS AT EACH CONNECTION POINT.
- INSTALL ADAPTERS PER MANUFACTURE'S GUIDELINES, PROPERLY RESTRAIN BY WELDING OR OTHER METHODS, AND GROUT EXTERIOR JOINT BETWEEN EXISTING PIPE AND ADAPTER TO PROTECT EXPOSED STEEL FROM CORROSION.
- INSTALL REMAINING DIP PIPE SECTIONS, SLEEVES, FITTINGS, ETC. TO COMPLETE CONNECTION BETWEEN EXISTING PIPE AND NEW PIPE. DO NOT BACKFILL.
- OPEN AND CLOSE LINE-STOP VALVES AS REQUIRED TO CLOSE BYPASS PIPING AND REDIRECT ALL FLOW INTO NEW FORCE MAIN PIPE.
- OBSERVE AND VERIFY WITH OWNER THAT THERE ARE NO VISIBLE LEAKS AT THE CONNECTIONS.
- FOLLOWING OWNER'S APPROVAL, BACKFILL ALL EXPOSED PIPING.
- REMOVE ALL WASTEWATER FROM BYPASS PIPING PROPERLY DISPOSE, REMOVE ALL LINE-STOP AND BYPASS PIPING AND VALVES.

CONNECTION AND BYPASS DETAIL

NOT TO SCALE



PLAN
(4) #5 X 4'-0" LONG
OPENING PERIMETER BARS,
EACH FACE



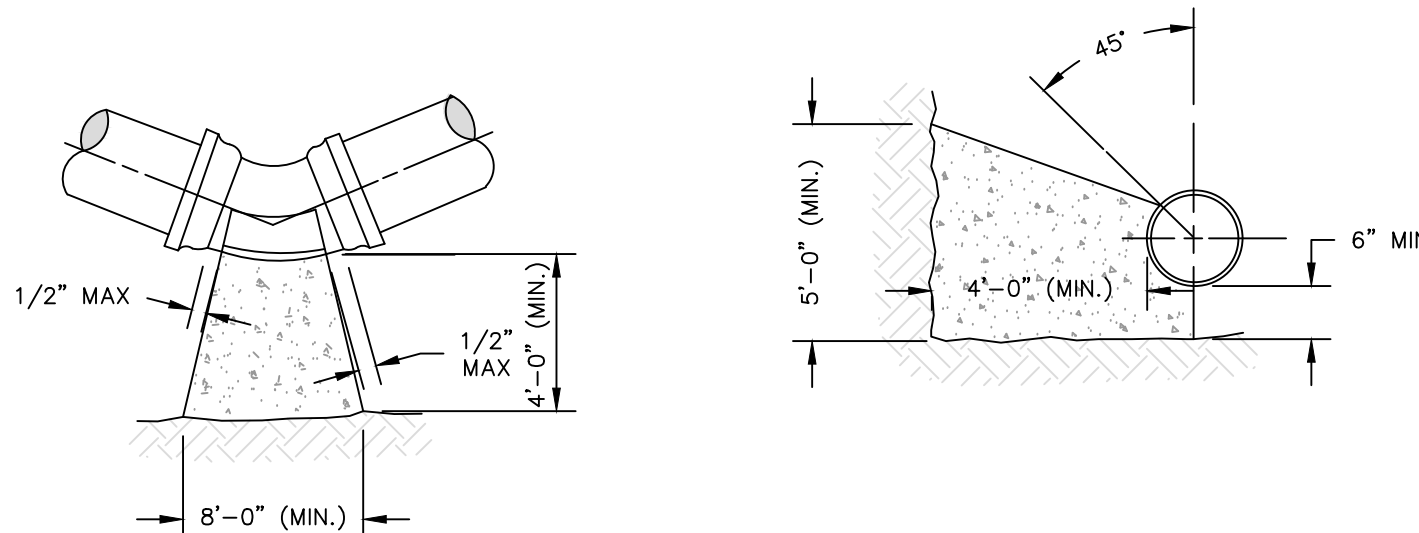
SECTION A-A

NOTES:

- COURSE AGGREGATE: ASTM C33, #57 OR #67.
- REINFORCING STEEL: ASTM A615, GRADE 60.
- CONCRETE STRENGTH: 3,000 PSI (MIN).
- WATER CEMENT RATIO BY WEIGHT: 0.49 (MAX).
- COMPACT SOIL TO 90% STANDARD PROCTOR.

CONCRETE THRUST COLLAR DETAIL

NOT TO SCALE

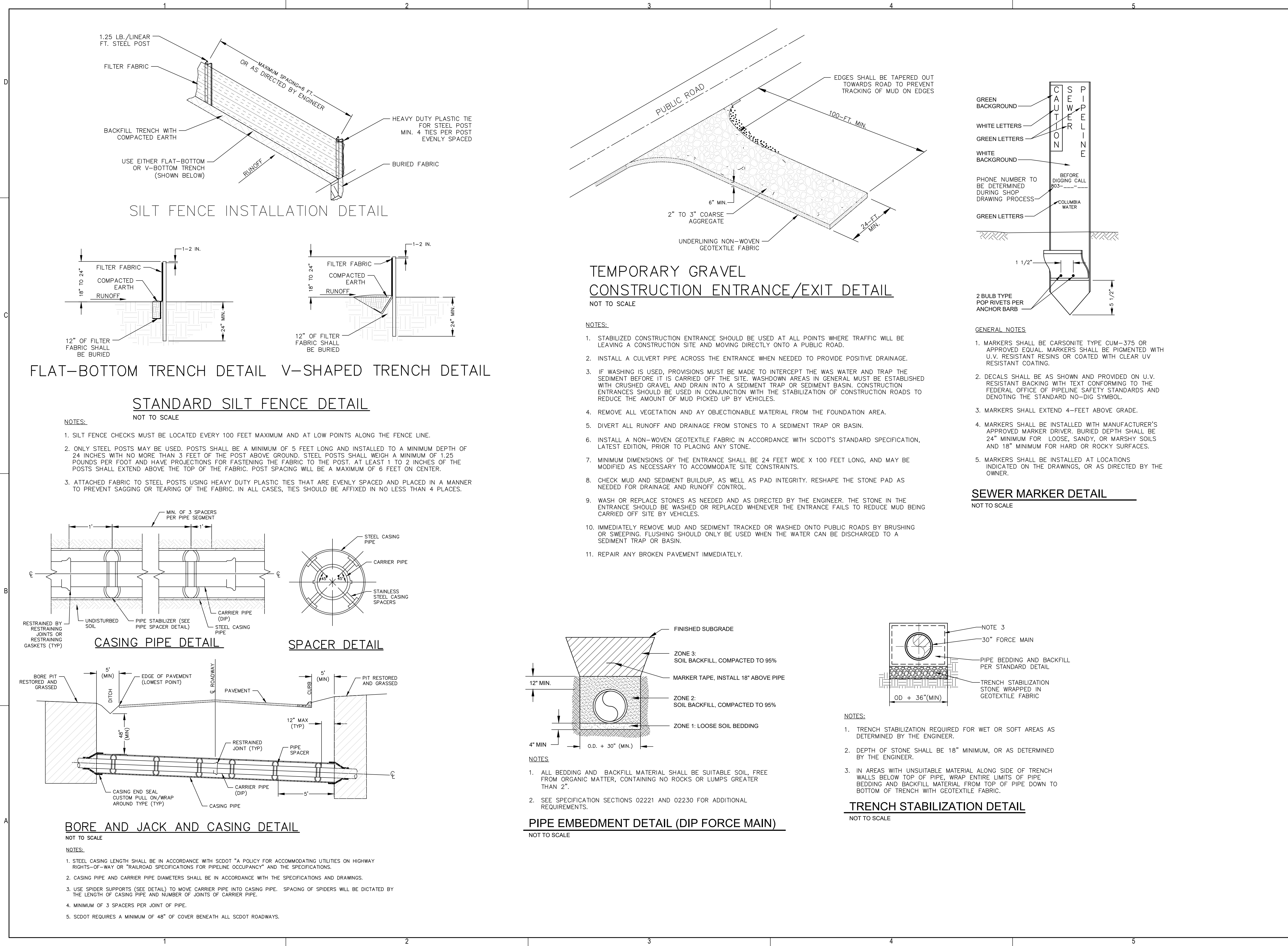


NOTES:

- COURSE AGGREGATE: ASTM C33, #57 OR #67.
- CONCRETE STRENGTH: 3,000 PSI (MIN).
- WATER CEMENT RATIO BY WEIGHT: 0.49 (MAX).
- COMPACT SOIL TO 90% STANDARD PROCTOR.

CONCRETE THRUST BLOCK DETAIL

NOT TO SCALE



OWNER

DEPARTMENT OF ENGINEERING
 P.O. BOX 147
 COLUMBIA SOUTH CAROLINA 29217

PROJECT

30" FORCE MAIN
 RELOCATION
 UNDER I-20

REVISION

MARK	DATE	DESCRIPTION
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HDR DRAWING INFORMATION

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CIVIL ENGINEER	MATTHEW SHULTZ, PE
DRAWN BY	JIM KROOSWYK

CORPORATE SEAL

ENGINEER SEAL

PRELIMINARY

SCALE

NTS

SHEET NAME

DETAILS 2

SHEET NUMBER

02C-101

SHEET 5 OF 13

1

2

3

4

5

EROSION & SEDIMENT CONTROL STANDARD NOTES

1. IF NECESSARY, SLOPES, WHICH EXCEED EIGHT (8) VERTICAL FEET SHOULD BE STABILIZED WITH SYNTHETIC OR VEGETATIVE MATS, IN ADDITION TO HYDROSEEDING. IT MAY BE NECESSARY TO INSTALL TEMPORARY SLOPE DRAINS DURING CONSTRUCTION. TEMPORARY BERMS MAY BE NEEDED UNTIL THE SLOPE IS BROUGHT TO GRADE.

2. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN FOURTEEN (14) DAYS AFTER WORK HAS CEASED, EXCEPT AS STATE BELOW.

a. WHERE STABILIZATION BY THE 14TH DAY IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS, STABILIZATION MEASURES MUST BE INITIATED AS SOON AS PRACTICABLE.

b. WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN 14 DAYS, TEMPORARY STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE.

3. ALL SEDIMENT AND EROSION CONTROL DEVICES SHALL BE INSPECTED AT LEAST ONCE EVERY CALENDAR WEEK. IF PERIODIC INSPECTION OR OTHER INFORMATION INDICATES THAT A BMP HAS BEEN INAPPROPRIATELY, OR INCORRECTLY, THE PERMITTEE MUST ADDRESS THE NECESSARY REPLACEMENT OR MODIFICATION REQUIRED TO CORRECT THE BMP WITHIN 48 HOURS OF IDENTIFICATION.

4. PROVIDE SILT FENCE AND/OR OTHER CONTROL DEVICES, AS MAY BE REQUIRED, TO CONTROL SOIL EROSION DURING UTILITY CONSTRUCTION. ALL DISTURBED AREAS SHALL BE CLEANED, GRADED, AND STABILIZED WITH GRASSING IMMEDIATELY AFTER THE UTILITY INSTALLATION. FILL, COVER, AND TEMPORARY SEEDING AT THE END OF EACH DAY ARE RECOMMENDED. IF WATER IS ENCOUNTERED WHILE TRENCHING, THE WATER SHOULD BE FILTERED TO REMOVE SEDIMENT BEFORE BEING PUMPED BACK INTO ANY WATERS OF THE STATE.

5. ALL EROSION CONTROL DEVICES SHALL BE PROPERLY MAINTAINED DURING ALL PHASES OF CONSTRUCTION UNTIL THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES AND ALL DISTURBED AREAS HAVE BEEN STABILIZED. ADDITIONAL CONTROL DEVICES MAY BE REQUIRED DURING CONSTRUCTION IN ORDER TO CONTROL EROSION AND/OR OFFSITE SEDIMENTATION. ALL TEMPORARY CONTROL DEVICES SHALL BE REMOVED ONCE CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.

6. THE CONTRACTOR MUST TAKE NECESSARY ACTION TO MINIMIZE THE TRACKING OF MUD ONTO PAVED ROADWAY(S) FROM CONSTRUCTION AREAS AND THE GENERATION OF DUST. THE CONTRACTOR SHALL DAILY REMOVE MUD/SOIL FROM PAVEMENT, AS MAY BE REQUIRED.

7. RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING CONSTRUCTION OR OBTAIN APPROVAL OF AN INDIVIDUAL PLAN IN ACCORDANCE WITH S.C. REG 72-300 ET SEQ. AND SCR100000.

8. TEMPORARY DIVERSION BERMS AND/OR DITCHES WILL BE PROVIDED AS NEEDED DURING CONSTRUCTION TO PROTECT WORK AREAS FROM UPSLOPE RUNOFF AND/OR TO DIVERT SEDIMENT-LADEN WATER TO APPROPRIATE TRAPS OR STABLE OUTLETS.

9. ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE SHALL BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN'T BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WOS.

10. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.

11. A COPY OF THE SWPPP, INSPECTIONS RECORDS, AND RAINFALL DATA MUST BE RETAINED AT THE CONSTRUCTION SITE OR A NEARBY LOCATION EASILY ACCESSIBLE DURING NORMAL BUSINESS HOURS, FROM THE DATE OF COMMENCEMENT OF CONSTRUCTION ACTIVITIES TO THE DATE THAT FINAL STABILIZATION IS REACHED.

12. INITIATE STABILIZATION MEASURES ON ANY EXPOSED STEEP SLOPE (3H:1V OR GREATER) WHERE LAND-DISTURBING ACTIVITIES HAVE PERMANENTLY OR TEMPORARY CEASED, AND WILL NOT RESUME FOR A PERIOD OF 7 CALENDAR DAYS.

13. MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.

14. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER, AND OTHER WASH WATERS. WASH WATERS MUST BE TREATED IN A SEDIMENT BASIN OR ALTERNATIVE CONTROL THAT PROVIDES EQUIVALENT OR BETTER TREATMENT PRIOR TO DISCHARGE.

15. MINIMIZE ; DISCHARGE OF POLLUTANTS FROM DEWATERING OF TRENCHES AND EXCAVATED AREAS. THESE DISCHARGES ARE TO BE ROUTED THROUGH APPROPRIATE BMPS (SEDIMENT BASIN, FILTER BAG, ETC.)

THE FOLLOWING DISCHARGES FROM SITES ARE PROHIBITED:

a. WASTEWATER FROM WASHOUT OF CONCRETE, UNLESS MANAGED BY AN APPROPRIATE CONTROL;

b. WASTEWATER FROM WASHOUT AND CLEANOUT OF STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS;

c. FUELS, OILS, OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE; AND

d. SOAPS OR SOLVENTS USED IN VEHICLE AND EQUIPMENT WASHING.

17. AFTER CONSTRUCTION ACTIVITIES BEGIN, INSPECTIONS MUST BE CONDUCTED AT A MINIMUM OF AT LEAST ONCE EVERY CALENDAR WEEK AND MUST BE CONDUCTED UNTIL FINAL STABILIZATION IS REACHED ON ALL AREAS OF THE CONSTRUCTION SITE.

18. IF EXISTING BMPS NEED TO BE MODIFIED OR IF ADDITIONAL BMPS ARE NECESSARY TO COMPLY WITH THE REQUIREMENTS OF THIS PERMIT AND/OR SC'S WATER QUALITY STANDARDS, IMPLEMENTATION MUST BE COMPLETED BEFORE THE NEXT STORM EVENT WHENEVER PRACTICABLE. IF IMPLEMENTATION BEFORE THE NEXT STORM EVENT IS IMPRACTICABLE, THE SITUATION MUST BE DOCUMENTED IN THE SWPPP AND ALTERNATIVE BMPS MUST BE IMPLEMENTED AS SOON AS REASONABLY POSSIBLE.

19. A PRE-CONSTRUCTION CONFERENCE MUST BE HELD FOR EACH CONSTRUCTION SITE WITH AN APPROVED ON-SITE SWPPP PRIOR TO THE IMPLEMENTATION OF CONSTRUCTION ACTIVITIES. FOR NON-LINEAR PROJECTS THAT DISTURB 10 ACRES OR MORE THIS CONFERENCE MUST BE HELD ON-SITE UNLESS THE DEPARTMENT HAS APPROVED OTHERWISE.

FERTILIZATION AND MULCHING SCHEDULE

ALL QUANTITIES ARE PER 1,000 SQUARE FEET

FROM MAY 1 – AUGUST 30:

FROM SEPTEMBER 1 – APRIL 30:

75 LBS AGRICULTURAL LIME

25 LBS 10-10-10 FERTILIZER*

2 BALES GRAIN STRAW MULCH

75 LBS AGRICULTURAL LIME

2 BALES GRAIN STRAW MULCH

IF HYDROSEEDED, USE 13 LBS PER 1,000 SQUARE FEET OF LOW SALT FORMATION OF 19-19-19 INSTEAD OF 10-10-10 TO GIVE LONG TERM FERTILIZATION BENEFITS.

LIQUID LIME IS NOT A SUBSTITUTE FOR AGRICULTURAL LIME. A FEW GALLONS OF LIQUID LIME RAISES SOIL PH ONE POINT, BUT THIS EFFECT IS VERY TEMPORARY – USUALLY 45-50 WEEKS. LIQUID LIME MAY BE USED WITH AGRICULTURAL LIME TO GIVE QUICK RESULTS TOGETHER WITH THE LONG TERM BENEFITS OF AGRICULTURAL LIME.

GRAIN STRAW MULCH IS THE MOST IMPORTANT INGREDIENT IN THESE SEEDING RECOMMENDATIONS AND IS 90% OF THE REASON FOR SUCCESS. PAPER AND OTHER SYNTHETIC MULCHES MAY BE SUBSTITUTED FOR GRAIN STRAW WHEN A HYDROSEEDER IS USED, BUT NOT ON STEEP AREAS AREAS WITH CONCENTRATED WATER RUNOFF, OR ON DEEP SANDY SOILS. (ALL SLOPES STEEPER THAN 2:1 MUST BE HYDROSEEDED AND MULCHED WITH GRAIN STRAW USING AN APPROVED ANCHORING METHOD SUCH AS GLUE TACKIFIER OR TRACTOR AND STRAIGHT DISK HARROW). NOTE: BAHIA GRASS IS A GOOD EROSION CONTROL GRASS, HOWEVER IT PRODUCES MANY SEED HEADS WHICH SCATTER SEED TO OTHER AREAS. BAHIA GRASS IS HARD TO MOW BUT DOES NOT REQUIRE THE CARE OTHER GRASSES REQUIRE. AROUND OFFICE BUILDINGS AND WITHIN SUBDIVISIONS USE 4 TO 6 OZ. CENTIPEDE SEED PER 1,000 SQUARE FEET IN LIEU OF BAHIA GRASS.

GROWTH OF RYE GRASS AND GRAIN RYE MUST BE MOWED IN EARLY SPRING TO ENCOURAGE GROWTH OF THE PERMANENT GRASSES – BERMUDA GRASS, BAHIA GRASS, AND CENTIPEDE GRASS.

SEEDING SCHEDULE

NTS

Temporary Seeding - Coastal (Sandy, Droughty Sites)

Species	lbs/ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Browntop Millet	40												
Rye, Grain	56												
Ryegrass	50												

Temporary Seeding - Coastal (Well Drained, Clayey/Loamey Sites)

Browntop Millet or Japanese Millet	40												
Rye, Grain or Oats	75												
Rye Grass	50												

Permanent Seeding - Coastal (Sandy, Droughty Sites)

Species	Lbs/AC	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Browntop Millet	10												
Bahia Grass	40												
Browntop Millet	10												
Bahia Grass	30												
Sericea Lespedeza	40												
Browntop Millet	10												
Atlantic Coasta IPanic Grass	15												
Browntop Millet	10												
Switch Grass (Alamo)	8 PLS												
Little Bluestem	4												
Sericea Lespedeza	20												
Browntop Millet	10												
Weeping Love Grass	8												

Permanent Seeding - Coastal (Well Drained, Clayey/Loamey Sites)

Browntop Millet	10												
Bahiagrass	40												
Rye, Grain	10												
Bahiagrass	40												
Clower, Crimson (Annual)	5												
Browntop Millet	10												
Bahiagrass	30												
Sericea Lespedeza	40												
Browntop Millet	10												
Bermuda, Commom	10												
Sericea Lespedeza	40												
Browntop Millet	10												
Bermuda, Commom	12												
Kobe Lespedeza (Annual)	10												
Browntop Millet	10												
Bahiagrass	20												
Bermuda, Common	6												
Sericea Lespedeza	40												
Browntop Millet	10												
Switchgrass	8 PLS												
Little Bluestem	3 PLS												
Indiangrass	3 PLS												

Temporary Seeding - Upstate

Species	lbs/ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Browntop Millet (Alone)	40												
Browntop Millet (Mix)	10												
Rye Grain (Alone)	56												
Rye Grain (Mix)	10												
Rye Grass (Alone)	50												
Rye Grass (Mix)	8												

Temporary Seeding - Upstate (For Steep Fill/Cut Slopes)

Weeping Lovegrass (Alone)	2												
Weeping Lovegrass (Mix)	2												

Permanent Seeding - Upstate

Species	lbs/ac	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bahia Grass (Alone)	40												
Bahia Grass (Mix)	30												
Bermuda Grass (H-Alone)	8-12												
Bermuda Grass (H-Mix)	4-6												
Fescue, Tall (KY31-Alone)	40												
Fescue, Tall (KY31-Mix)	20												
Sericea Lespedeza (Scarified) Alone or Mix (Inoculate with EL Inoculant)	40												
Ladino Clover (Mix only) (Inoculate with AB Inoculant)	2												

Permanent Seeding - Upstate (For Steep Fill/Cut Slopes)

Weeping Lovegrass (Alone)	4												
Weeping Lovegrass (Mix)	2												
Crownvetch (Mix) (Inoculate with Type M Inoculant)	8-10												

INSPECTION & MAINTENANCE

1. INSPECT SILT FENCE AND INLET FILTERS TO ENSURE PROPER INSTALLATION ONCE EVERY SEVEN (7) CALENDAR DAYS. CHECK INTEGRITY OF FENCE FOR EROSION BENEATH THE SEDIMENT AND EROSION CONTROL DEVICES, SAGGING OR COLLAPSED DEVICES. MAKE NEEDED REPAIRS IMMEDIATELY.

2. SHOULD THE FABRIC ON A SILT FENCE DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO STABILIZATION OF THE CONSTRUCTION SITE, THE FABRIC SHALL BE REPLACED PROMPTLY.

3. SEDIMENT DEPOSITS SHALL BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-THIRD THE HEIGHT OF THE SILT FENCE OR FILTER FABRIC.

CONSTRUCTION SEQUENCE

ITEMS MUST OCCUR IN THE ORDER LISTED. ITEMS CANNOT OCCUR CONCURRENTLY UNLESS SPECIFICALLY NOTED.

1. RECEIVE PERMIT COVERAGE FROM CITY OF COLUMBIA AND NPDES COVERAGE FROM SCDHEC.

2. PRE-CONSTRUCTION MEETING (ON-SITE IF MORE THAN 5,000 SQ. FT. ARE DISTURBED AND THE PROJECT IS NON-LINEAR).

3. NOTIFY CITY OF COLUMBIA STORM WATER MANAGEMENT (803) 545-3188 AT LEAST 2 DAYS PRIOR TO BEGINNING LAND DISTURBANCE.

4. INSTALLATION OF CONSTRUCTION ENTRANCE(S) AS APPLICABLE.

5. CLEARING AND GRUBBING ONLY AS NECESSARY FOR INSTALLATION OF PERIMETER CONTROLS.

6. INSTALLATION OF PERIMETER CONTROLS (E.G. SILT FENCE) AS APPLICABLE.

7. CLEARING AND GRUBBING OF SITE OR DEMOLITION (SEDIMENT AND EROSION CONTROL MEASURES FOR THESE AREAS MUST ALREADY BE INSTALLED).

8. FINE GRADING, PAVING, ETC.

9. PERMANENT/FINAL STABILIZATION.

10. REMOVAL OF TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AFTER ENTIRE AREA DRAINING TO THE STRUCTURE IS FINALLY STABILIZED (IT IS RECOMMENDED THAT THE PROJECT OWNER/OPERATOR HAVE THE SWPPP PREPARER OR REGISTRATION EQUIVALENT APPROVE THE REMOVAL OF TEMPORARY STRUCTURES).

11. SUBMIT NOTICE OF TERMINATION (NOT) TO CITY OF COLUMBIA STORM WATER MANAGEMENT AS APPROPRIATE.

1. NOTE: IF NPDES COVERAGE IS BEING ISSUED AFTER LAND-DISTURBING ACTIVITIES HAVE ALREADY STARTED (E.G. IN RESPONSE TO A NOTICE TO COMPLY, NOTICE OF VIOLATION, OR ENFORCEMENT ACTION), THEN THE CONSTRUCTION SEQUENCE MUST SPECIFICALLY INDICATE THE ITEMS THAT HAVE ALREADY OCCURRED AND THE ITEMS THAT WILL BE OCCURRING AFTER NPDES COVERAGE IS ISSUED.

2. NOTE: INSTALLATION OF SOME PERMANENT WATER QUALITY DEVICES SHOULD OCCUR AFTER THE SITE IS STABILIZED; INCLUDE THIS IN THE SEQUENCE. CLEANOUT OF OTHER WATER QUALITY DEVICES THAT WERE USED DURING CONSTRUCTION SHOULD OCCUR AFTER SITE STABILIZATION.

3. NOTE: MAINTENANCE OF SEDIMENT AND EROSION CONTROL MEASURES MUST CONTINUE UNTIL THE SITE IS PERMANENTLY STABILIZED AND/OR UNTIL THE CONTROLS ARE REMOVED.

LIMITS OF DISTURBANCE

1. DISTURBED AREA = 1.0 ACRE.

2. THIS IS A LINEAR PROJECT THAT WILL ONLY INCLUDE DISTURBANCE FOR UTILITY TRENCHES WITH NO NEW IMPERVIOUS AREA BEING CREATED. THE UTILITY EXCAVATIONS WILL BE BACKFILLED AND RETURNED TO ORIGINAL GRADE.

DHEC STORMWATER MANAGEMENT AND SEDIMENT AND EROSION CONTROL PLAN

I HAVE PLACED MY SIGNATURE AND SEAL ON THE DESIGN DOCUMENTS SUBMITTED SIGNIFYING THAT I ACCEPT RESPONSIBILITY FOR THE DESIGN OF THE SYSTEM. FURTHER, I CERTIFY TO THE BEST OF MY KNOWLEDGE AND BELIEF THAT THE DESIGN IS CONSISTENT WITH THE REQUIREMENTS OF TITLE 48, CHAPTER 14 OF THE CODE OF LAWS OF SC, 1976 AS AMENDED, PURSUANT TO REGULATION 72-300 ET SEQ. (IF APPLICABLE), AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF SCR100000.

DESIGNER'S CERTIFICATION

"I HEREBY CERTIFY THAT THIS PLAN IS DESIGNED TO CONTAIN SOIL ON THE PROPERTY CONCERNED TO THE MAXIMUM EXTENT, TO PROVIDE FOR THE PROTECTION OF THE PROPERTY AND THE PROPOSED IMPROVEMENTS THEREON FROM THE EFFECTS OF FLOODING, TO PROVIDE FOR THE CONTROL OF THE RUNOFF FROM THE PROPERTY, AND THAT ALL THE PROVISIONS FOR SEDIMENT CONTROL AND STORM DRAINAGE ARE IN ACCORDANCE WITH THE STORMWATER MANAGEMENT AND SEDIMENT CONTROL ORDINANCE FOR APPLICABLE COUNTY AND CITY OF COLUMBIA, SOUTH CAROLINA."

DATE REGISTERED ENGINEER NAME

APPLICANT'S CERTIFICATION

"I (WE) HEREBY CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION, AND/OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS PLAN AND I (WE) ARE RESPONSIBLE FOR THE LAND DISTURBANCE AND RELATED MAINTENANCE THEREOF. CITY OF COLUMBIA, APPLICABLE COUNTY, AND SCDHEC AUTHORITIES WILL BE ALLOWED TO ENTER THE PROJECT SITE FOR THE PURPOSE OF ON-SITE INSPECTIONS."

DATE OWNER/PERMIT APPLICANT

OWNER

Columbia Water

DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

PROJECT

30" FORCE MAIN
RELOCATION
UNDER I-20

REVISION

B	10/2024	90% DESIGN
A	08/2024	60% DESIGN
MARK	DATE	DESCRIPTION

HDR DRAWING INFORMATION

HDR PROJECT NUMBER	10207730
PROJECT MANAGER	RAVEN GAMBRELL PE
CIVIL ENGINEER	MATTHEW SHULTZ PE
DRAWN BY	JIM KROOSWYK

CORPORATE SEAL

SOUTH CAROLINA

HDR ENGINEERING, INC.

OF THE CAROLINAS

No. 00318

DATE OF AUTHORIZATION

ENGINEER SEAL

PRELIMINARY

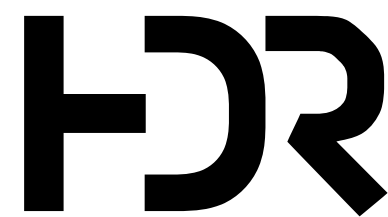
SCALE NTS

SHEET NAME

DETAILS 3

SHEET NUMBER

02C-102
SHEET 6 OF 13



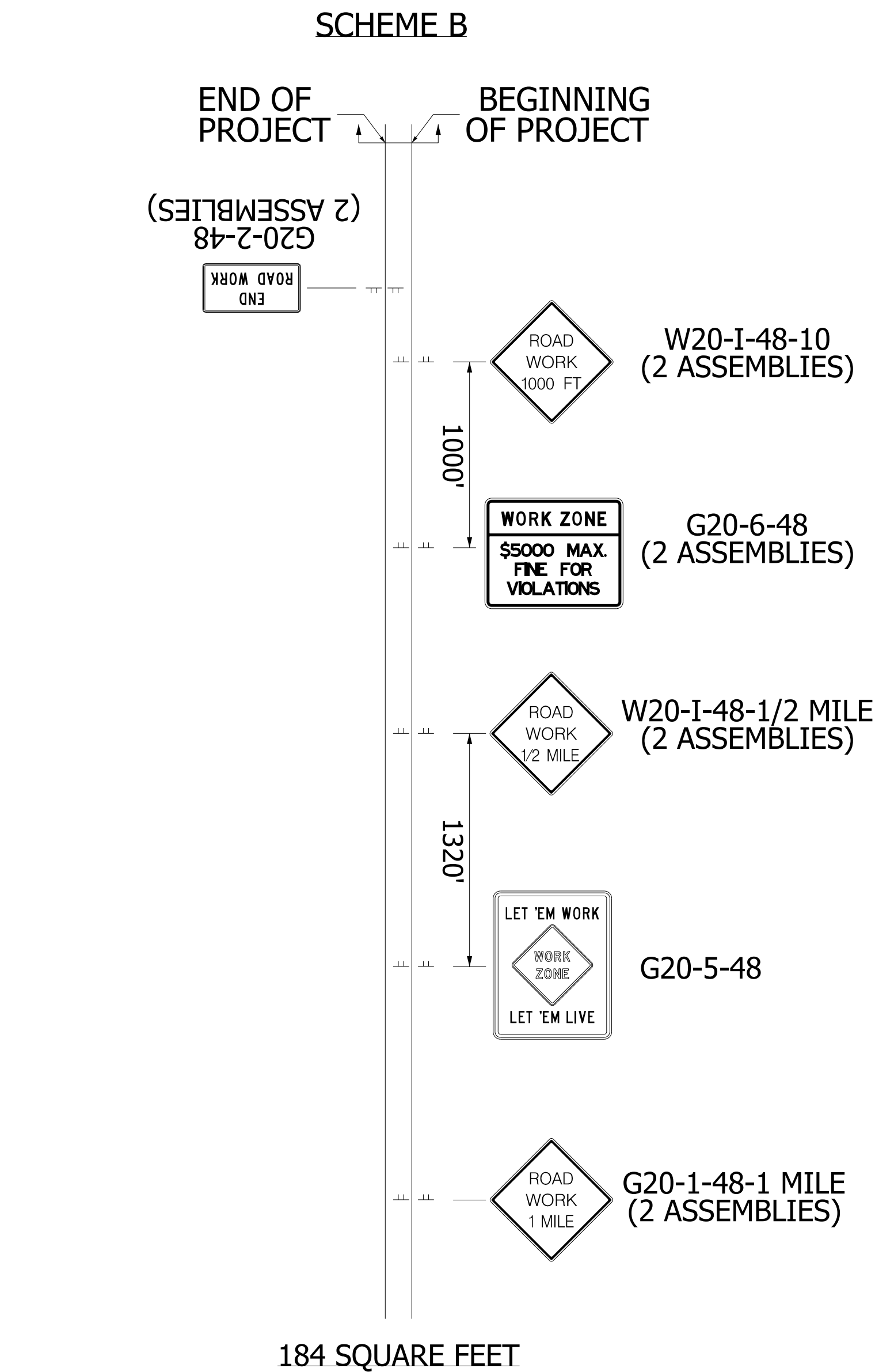
GENERAL TRAFFIC CONTROL ITEMS TO BE USED DURING ALL STAGES AND PHASES

- 1. PLACE TRAFFIC CONTROL CHANNELIZING DEVICES IN ACCORDANCE WITH SCDOT STANDARD DRAWING 601-010-00.
- 2. SEE SCDOT STANDARD DRAWING 601-005-00 FOR SPECIFIC CHANNELIZING DEVICES THAT MAY BE USED DURING DAYTIME OR NIGHT TIME OPERATIONS. THE SYMBOLS (●) USED IN THIS PLAN SET ARE A REPRESENTATION OF THE PORTABLE PLASTIC DRUMS WITH TYPE III HIGH INTENSITY REFLECTIVE SHEETING. THE SPACING OF THE TRAFFIC CONTROL DEVICES ARE TO ILLUSTRATE THE CHANNELIZATION OF TRAFFIC.
- 3. SEE SCDOT STANDARD DRAWING 601-010-00 FOR DRUM INTERVAL SPACING ALONG ROADWAYS. DRUMS SHALL BE PLACED AT 20' INTERVALS ALONG ALL SHIFTING OR LANE CLOSURE TAPERS.
- 4. ALL DISTANCES SHOWN ON TRAFFIC CONTROL PLANS ARE REFERENCED FROM SCDOT STANDARD DRAWINGS AND/OR SCDOT WORK ZONE SAFETY GUIDELINES FOR THE SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION, MUNICIPALITIES, COUNTIES, UTILITIES, AND CONTRACTORS. REFER TO THESE PUBLICATIONS TO VERIFY DISTANCES SHOWN OR NOT SHOWN ON TRAFFIC CONTROL PLANS.
- 5. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE TRAFFIC CHANNELIZING DEVICES WHICH ADHERE TO SCDOT MINIMUM STANDARDS AND SPECIFICATIONS.
- 6. SEE SCDOT STANDARD DRAWING SECTION 605-105-00 THROUGH 605-430-00 FOR TEMPORARY CONCRETE BARRIER INSTALLATION, PLACEMENT, NOTES, AND DETAILS.
- 7. ALL TEMPORARY SIGNS ON THESE TRAFFIC CONTROL PLANS ARE TEMPORARY AND SHOULD BE REMOVED AT THE CONCLUSION OF CONSTRUCTION.
- 8. HOURLY LANE CLOSURE RESTRICTIONS:

SEGMENT	SINGLE LANE CLOSURE RESTRICTIONS		DUAL LANE CLOSURE RESTRICTIONS	
	EASTBOUND	WESTBOUND	EASTBOUND	WESTBOUND
I-20 MP 55 to MP 64 (I-26)	MON: 6A-6P	MON: 7A-7P	MON: 6A-9P	MON: 6A-9P
	TUE: 6A-7P	TUE: 7A-7P	TUE: 6A-9P	TUE: 6A-10P
	WED: 6A-7P	WED: 7A-7P	WED: 6A-9P	WED: 6A-10P
	THU: 6A-7P	THU: 7A-8P	THU: 6A-9P	THU: 6A-10P
LEXINGTON & RICHLAND COUNTIES	FRI: 6A-7P	FRI: 9A-8P	FRI: 6A-10P	FRI: 6A-11P
	SAT: 9A-5P	SAT: 10A-6P	SAT: 7A-9P	SAT: 7A-10P
	SUN: 11A-5P	SUN: 11A-7P	SUN: 8A-9P	SUN: 9A-10P

- 9. MAINTAIN EXISTING SIGNS THAT DO NOT CONFLICT WITH CONSTRUCTION SIGNAGE, ADJUST CONSTRUCTION SIGNAGE LOCATION WHERE NECESSARY. REMOVE OR COVER EXISTING SIGNS THAT CONFLICT WITH CONSTRUCTION SIGNAGE.
- 10. CONSTRUCTION VEHICLE ACCESS ALLOWED ONLY IN THE PRESENCE OF A LANE CLOSURE. SEE STANDARD DRAWINGS 610-105-01 AND 610-110-01 FOR INTERSTATE LANE CLOSURE REQUIREMENTS.
- 11. UPON COMPLETION OF THE WORK ZONE TRAFFIC CONTROL OPERATIONS, CONTRACTOR SHALL REPLACE GUARDRAIL REMOVED FOR CONSTRUCTION ACCESS WITH PRE-MASH COMPLIANT GUARDRAIL SYSTEMS.

CONSTRUCTION SIGNING SCHEME LAYOUT



NOTE: STANDARD DRAWING 605-015-00, CONSTRUCTION SIGNING PERMANENT WORK ZONE \$5000 FINE INTERSTATE ROUTES

TWO (2) CONSTRUCTION ZONE ELECTRIC CHANGEABLE MESSAGE SIGNS (TRAILERS) SHALL BE INCLUDED FOR TRAFFIC CONTROL.

OWNER



DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

PROJECT

30" FORCE MAIN
RELOCATION
UNDER I-20

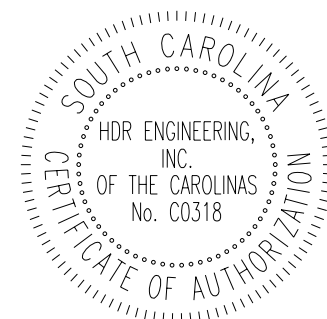
REVISION

B	10/2024	90% DESIGN
A	08/2024	60% DESIGN
MARK	DATE	DESCRIPTION

HDR DRAWING INFORMATION

HDR PROJECT NUMBER	10207730
PROJECT MANAGER	RAVEN GAMBRELL, PE
CIVIL ENGINEER	JONATHAN EICHELBERGER, PE
DRAWN BY	BECKY GENTRY, EIT

CORPORATE SEAL



ENGINEER SEAL

PRELIMINARY

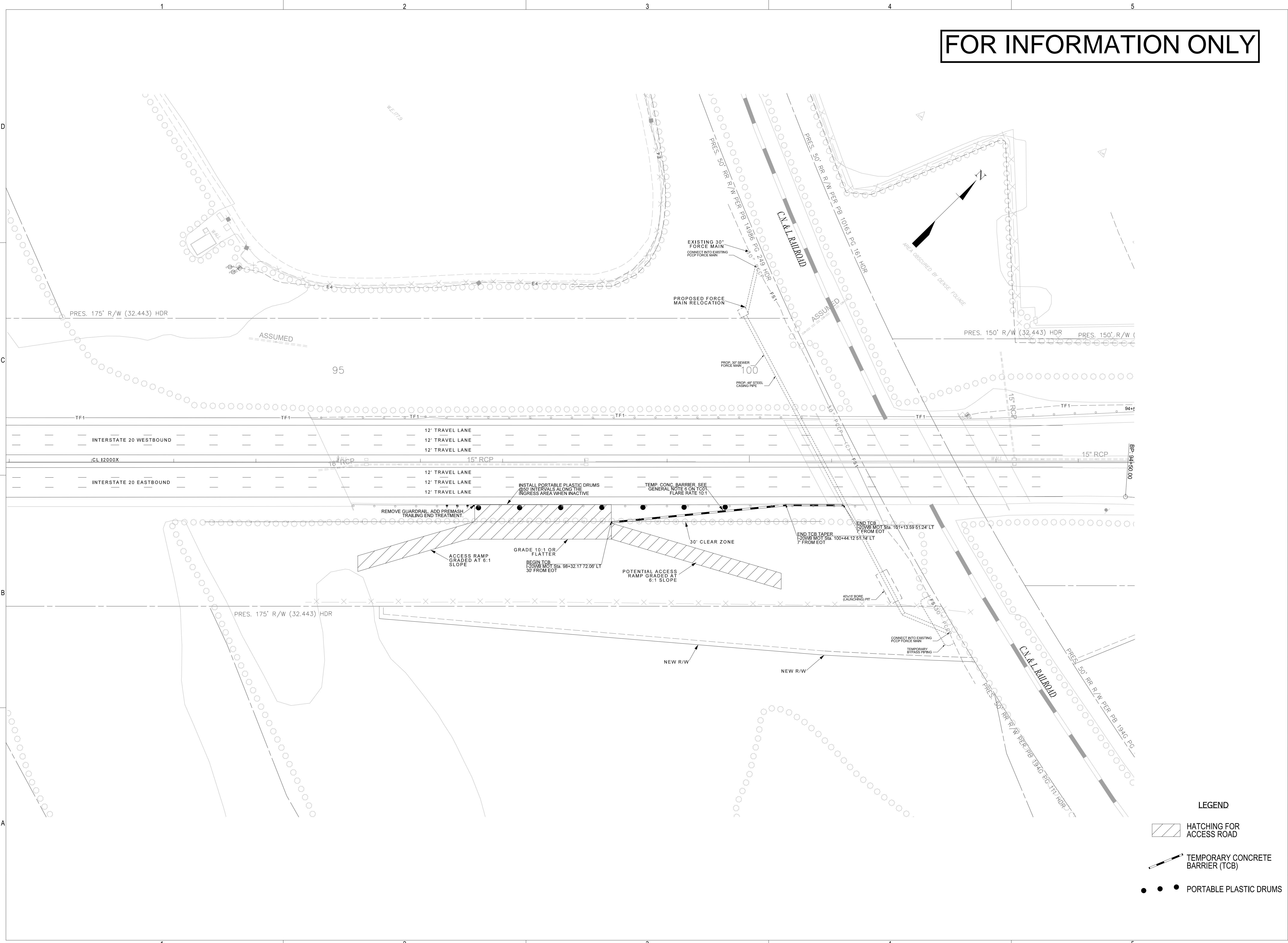
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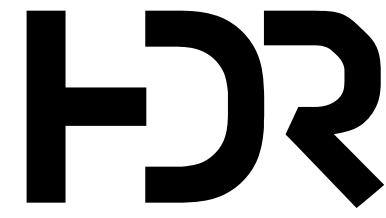
CCR
TC07
TRAFFIC CONTROL PLANS

SHEET NUMBER

03C-100
SHEET 7 OF 13



FOR INFORMATION ONLY



OWNER

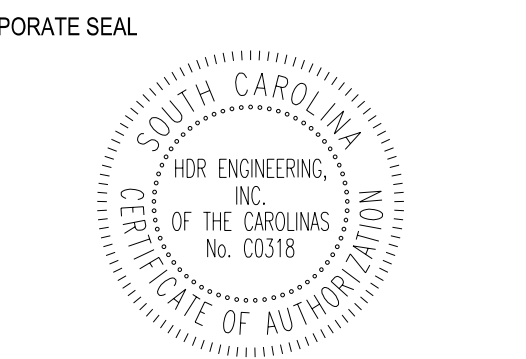
Columbia Water
DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

PROJECT

30" FORCE MAIN
RELOCATION
UNDER I-20

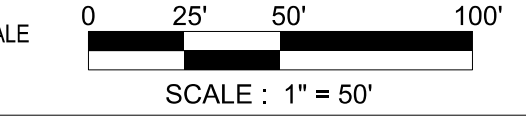
REVISION		
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PROJECT MANAGER	RAVEN GAMBRELL, PE
CIVIL ENGINEER	JONATHAN EICHELBERGER, PE
DRAWN BY	BECKY GENTRY, EIT



ENGINEER SEAL

PRELIMINARY

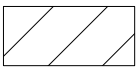




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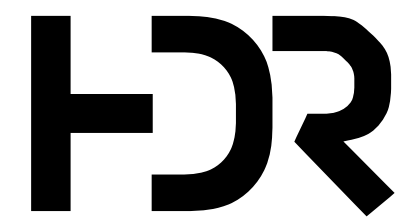
CCR
TC08
TRAFFIC CONTROL PLANS

SHEET NUMBER

03C-101
SHEET 8 OF 13

- LEGEND
-  HATCHING FOR ACCESS ROAD
 -  TEMPORARY CONCRETE BARRIER (TCB)
 -  PORTABLE PLASTIC DRUMS

FOR INFORMATION ONLY



OWNER



DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

PROJECT

30" FORCE MAIN
RELOCATION
UNDER I-20

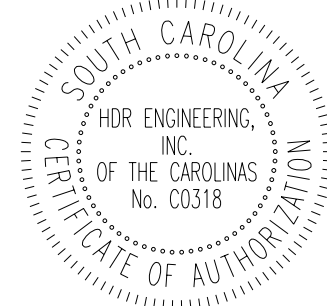
REVISION

B	10/2024	90% DESIGN
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DRAWN BY	BECKY GENTRY, EIT

CORPORATE SEAL



ENGINEER SEAL

PRELIMINARY

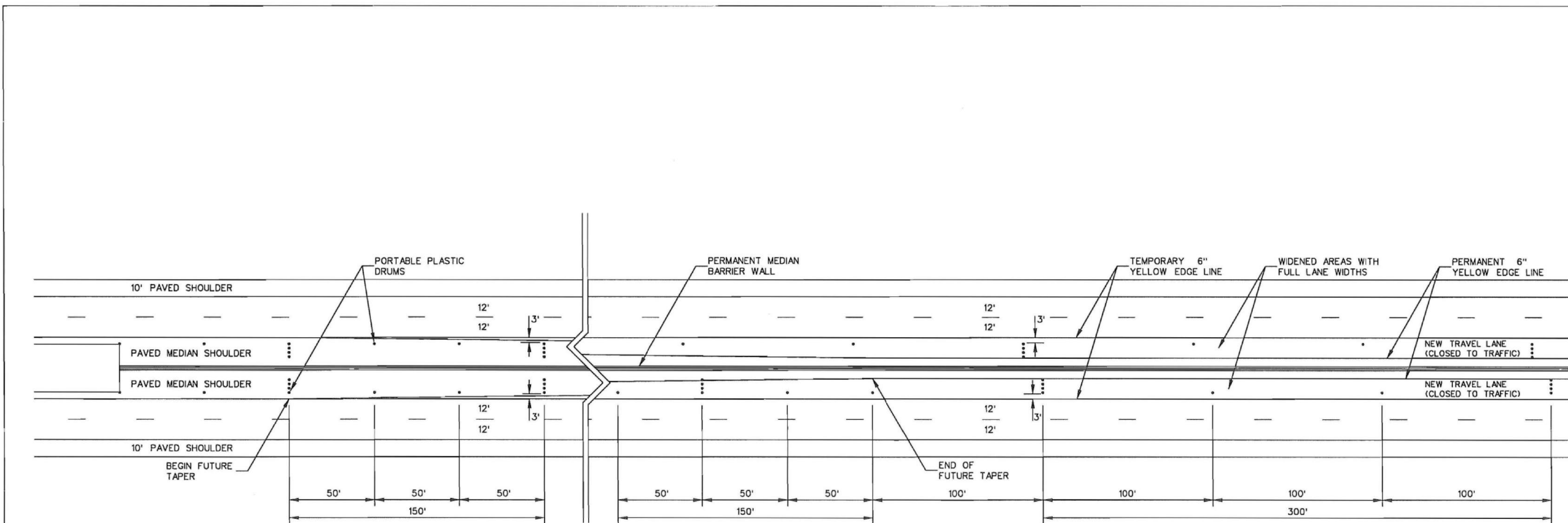
SCALE

SHEET NAME

CCR
TC09
TRAFFIC CONTROL PLANS

SHEET NUMBER

03C-102
SHEET 9 OF 13



Estimated Quantities
for
Traffic Control Devices

* - Estimates Based on 1 Mile of Roadway
w/ Taper Area (1 Direction Only)

	Portable Plastic Drums (Each)
Taper Area	34
Full Lane Width	92
Total	126

Estimated Quantities
for
Traffic Control Devices

* - Estimates Based on 1 Mile of Roadway
without Taper Area (Full Lane Width Only)
(1 Direction Only)

	Portable Plastic Drums (Each)
Full Lane Width	107

GENERAL NOTES

- ALL SIGN LOCATIONS ARE TO BE MEASURED FROM THE WORK AREA. WORK LIMITS FOR THE PROJECT WILL BE DETERMINED BY THE ENGINEER AND AS INDICATED IN THE CONTRACT.
- INSTALL ADVANCE WARNING SIGNS MOUNTED ON PORTABLE SIGN SUPPORTS NO LESS THAN 4 FEET FROM THE NEAR EDGE OF THE SIGN TO THE NEAR EDGE OF AN ADJACENT TRAVEL LANE ON ROADWAYS WITH EARTH SHOULDERS AND NO LESS THAN 6 FEET FROM THE NEAR EDGE OF THE SIGN TO THE NEAR EDGE OF AN ADJACENT TRAVEL LANE ON ROADWAYS WITH PAVED SHOULDERS. WHEN CURB & GUTTER IS PRESENT, INSTALL THE SIGN NO LESS THAN 2 FEET FROM THE NEAR EDGE OF THE SIGN TO THE FACE OF THE CURB.
- SPACINGS INDICATED ARE FOR NORMAL CONDITIONS; ADJUSTMENTS MAY BE REQUIRED DUE TO HORIZONTAL AND/OR VERTICAL ALIGNMENTS OR OTHER SIGHT DISTANCE RESTRICTIONS.
- ALL SIGNS MOUNTED ON PORTABLE SIGN SUPPORTS SHALL HAVE A MINIMUM MOUNTING HEIGHT OF 5 FEET FROM THE GROUND TO THE BOTTOM OF THE SIGN. ALL SIGNS MOUNTED ON GROUND MOUNTED U-CHANNEL POSTS OR SQUARE STEEL TUBE POSTS SHALL HAVE A MINIMUM MOUNTING HEIGHT OF 7 FEET FROM THE GRADE ELEVATION OF THE NEAR EDGE OF THE ADJACENT TRAVEL LANE TO THE BOTTOM OF THE SIGN UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT. MOUNT ALL SIGNS STRAIGHT AND LEVEL AND WITH THE FACE OF THE SIGNS PERPENDICULAR TO THE SURFACE OF THE ROADWAY.
- REFLECTORIZE ORANGE ADVANCE WARNING SIGNS AND ANY ORANGE AREAS OF A MULTI-COLORED ADVANCE WARNING SIGN WITH A FLUORESCENT ORANGE COLORED PRISMATIC RETROREFLECTIVE SHEETING. REFLECTORIZE WHITE REGULATORY SIGNS AND ANY WHITE AREAS OF A MULTI-COLORED ADVANCE WARNING SIGN WITH A WHITE COLORED PRISMATIC RETROREFLECTIVE SHEETING.
- ALL TRAFFIC CONTROL DEVICES SHALL COMPLY WITH ALL NCHRP REPORT 350 REQUIREMENTS AND SHALL REQUIRE APPROVAL BY THE DEPARTMENT. ONLY THOSE TRAFFIC CONTROL DEVICES INCLUDED ON THE "APPROVED PRODUCTS LIST FOR TRAFFIC CONTROL DEVICES IN WORK ZONES" ARE CONSIDERED ACCEPTABLE FOR USE. THIS LIST MAY BE ACCESSED ON THE DEPARTMENT'S WEB SITE AT: www.scdot.org.
- THE CONTRACTOR SHALL PROVIDE AND UTILIZE ANY SPECIAL SIGN MOUNTING ASSEMBLIES AND HARDWARE THAT MAY BE NECESSARY FOR INSTALLING AND MOUNTING SIGNS IN AREAS OF CONCRETE MEDIAN BARRIER, BRIDGE PARAPET WALLS OR DOUBLEFACED GUARDRAIL.
- REFLECTORIZE ALL BARRICADES WITH A TYPE VII OR IX PRISMATIC RETROREFLECTIVE SHEETING ON ALL PROJECTS LET TO CONTRACT AFTER MAY 1, 2012 UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT.
- INSTALL AND MAINTAIN ALL TRAFFIC CONTROL DEVICES AS ILLUSTRATED. UTILIZATION OF STANDARD TRAFFIC CONES, OVERSIZED TRAFFIC CONES OR BARRICADES IN PLACE OF THE PORTABLE PLASTIC DRUMS AS DIRECTED BY THIS TYPICAL TRAFFIC CONTROL STANDARD DRAWING IS PROHIBITED UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT.
- INSTALL AND MAINTAIN THE PORTABLE PLASTIC DRUMS NEAREST TO THE NEAR EDGE OF AN ADJACENT TRAVEL LANE NO CLOSER THAN 3 FEET AND NO FURTHER THAN 6 FEET AWAY FROM THE NEAR EDGE OF AN ADJACENT TRAVEL LANE UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT.
- THE MAXIMUM SPACING INTERVALS BETWEEN THE PORTABLE PLASTIC DRUMS PLACED ADJACENT TO A TRAVEL LANE IN THE WIDENED PAVEMENT AREAS WITH FULL LANE WIDTHS SHALL NOT EXCEED 100 FEET. THE MAXIMUM SPACING INTERVALS BETWEEN THE PORTABLE PLASTIC DRUMS PLACED ADJACENT TO A TRAVEL LANE IN THE APPROACH AREAS TO THE WIDENED PAVEMENT AREAS WITH FULL LANE WIDTHS SHALL NOT EXCEED 50 FEET. SUPPLEMENT EVERY THIRD PORTABLE PLASTIC DRUM ADJACENT TO A TRAVEL LANE IN THESE AREAS WITH AN ARRAY OF THREE ADDITIONAL PORTABLE PLASTIC DRUMS ALIGNED PERPENDICULAR TO THE TRAVELWAY AS ILLUSTRATED BY THIS TYPICAL TRAFFIC CONTROL STANDARD DRAWING.
- THE DEPARTMENT RESERVES THE RIGHT TO RESTRICT WORK OPERATIONS AND/OR WITHHOLD THE MONTHLY ESTIMATE IF THE TRAFFIC CONTROL IS NOT PROPERLY INSTALLED AND MAINTAINED AS DIRECTED BY THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, THE STANDARD DRAWINGS, THE PLANS AND/OR THE ENGINEER.
- THIS TYPICAL TRAFFIC CONTROL SETUP APPLIES TO MAINTAINING CLOSURE OF A NEW TRAVEL LANE THAT APPEARS COMPLETE BUT IS NOT READY TO BE OPENED TO TRAFFIC DURING INTERSTATE WIDENING PROJECTS.

LEGEND

- PORTABLE PLASTIC DRUMS

REFERENCES

WORK ZONE TRAFFIC
CONTROL ENGINEER



SIGNATURE

8/2/12

DATE

6			
5			
4			
3			
2			
1	9-27-11	JCS	GENERAL UPDATE
0	9-09-07	JCS	DRAWING NO. UPDATE
#	DATE	CHK	DESCRIPTION



STANDARD DRAWING

WIDENING PROJECTS
MEDIAN AREAS
INTERSTATE ROUTES

601-010-00

EFFECTIVE LETTING DATE: JAN, 2013

THIS DRAWING IS NOT TO SCALE

REFERENCES

WORK ZONE TRAFFIC CONTROL ENGINEER

SOUTH CAROLINA

LICENSED PROFESSIONAL ENGINEER

NO. 24242

WILLIE E. McCONNELL, JR.

Date:

2022.10.03

10:13:00

-04'00'

WEMcConnell

6

5

4

3

8-24-22

TED

UPDATE LAYOUTS

2

5-3-18

WEM

UPDATE TITLE & SIGNS

1

1-9-12

JCS

GENERAL UPDATE

0

8-13-07

JCS

DRAWING NO. UPDATE

#

DATE

CHK

DESCRIPTION

SCDOT

SOUTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN STANDARDS OFFICE

955 PARK STREET

ROOM 405

COLUMBIA, SC 29201

STANDARD DRAWING

CONSTRUCTION SIGNING PERMANENT WORK ZONE \$5000 FINE INTERSTATE ROUTES

605-015-00

EFFECTIVE LETTING DATE

JAN 2023

THIS DRAWING IS NOT TO SCALE

SCHEME A

END OF PROJECT

BEGINNING OF PROJECT

ROAD WORK NEXT XX MILES G20-1-60-

ROAD WORK 1000 FT W20-1-48-10 (2 ASSEMBLIES)

WORK ZONE \$5000 MAX. FINE FOR VIOLATIONS G20-6-48 (2 ASSEMBLIES)

ROAD WORK 1/2 MILE W20-1-48- 1/2 MILE (2 ASSEMBLIES)

LET EM WORK G20-5-48 (2 ASSEMBLIES)

ROAD WORK 1 MILE W20-1-48-1 MILE (2 ASSEMBLIES)

194 SQUARE FEET

SCHEME B

END OF PROJECT

BEGINNING OF PROJECT

ROAD WORK 1000 FT W20-1-48-10 (2 ASSEMBLIES)

WORK ZONE \$5000 MAX. FINE FOR VIOLATIONS G20-6-48 (2 ASSEMBLIES)

ROAD WORK 1/2 MILE W20-1-48- 1/2 MILE (2 ASSEMBLIES)

LET EM WORK G20-5-48 (2 ASSEMBLIES)

ROAD WORK 1 MILE W20-1-48-1 MILE (2 ASSEMBLIES)

184 SQUARE FEET

SCHEME C

PROJECT

W20-1-48-A (2 ASSEMBLIES)

ROAD WORK 1000 FT W20-1-48-10 (2 ASSEMBLIES)

END ROAD WORK G20-2-48 (2 ASSEMBLIES)

48 SQUARE FEET

SCHEME D

PROJECT

W20-1-48-A (2 ASSEMBLIES)

ROAD WORK 1000 FT W20-1-48-10 (2 ASSEMBLIES)

END ROAD WORK G20-2-48 (2 ASSEMBLIES)

48 SQUARE FEET

SCHEME E

PROJECT

W20-1-48-A (2 ASSEMBLIES)

ROAD WORK 1000 FT W20-1-48-10 (2 ASSEMBLIES)

END ROAD WORK G20-2-48 (2 ASSEMBLIES)

48 SQUARE FEET

GENERAL NOTES

- ALL SIGN LOCATIONS ARE TO BE MEASURED FROM THE WORK AREA. THE WORK LIMITS FOR THE PROJECT WILL BE DETERMINED BY THE ENGINEER AND AS INDICATED IN THE CONTRACT.
- INSTALL ALL PERMANENT CONSTRUCTION SIGNS ON APPROVED GROUND MOUNTED SIGN POSTS UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT. UTILIZE EITHER 3 PPF U-CHANNEL OR SQUARE STEEL TUBE POSTS FOR THESE INSTALLATIONS. INSTALL EACH PERMANENT CONSTRUCTION SIGN ASSEMBLY NO LESS THAN 2 FEET FROM THE NEAR EDGE OF A PAVED SHOULDER OR THE FACE OF A CURB OR 6-12 FEET FROM THE NEAR EDGE OF AN ADJACENT TRAVEL LANE WITHOUT THE PRESENCE OF A PAVED SHOULDER OR A CURB & GUTTER TO THE NEAREST EDGE OF THE SIGN ASSEMBLY. ALSO, MOUNT EACH PERMANENT CONSTRUCTION SIGN ASSEMBLY TO PROVIDE A MOUNTING HEIGHT OF NO LESS THAN 7 FEET OR NO GREATER THAN 8 FEET FROM THE BOTTOM EDGE OF THE PRIMARY SIGN TO THE GRADE ELEVATION OF THE NEAR EDGE OF THE ADJACENT TRAVEL LANE. HOWEVER, IF A SECONDARY SIGN IS MOUNTED BELOW THE PRIMARY SIGN, MOUNT THE SIGN ASSEMBLY TO PROVIDE A MOUNTING HEIGHT OF NO LESS THAN 6 FEET FROM THE BOTTOM EDGE OF THE SECONDARY SIGN TO THE GRADE ELEVATION OF THE NEAR EDGE OF THE ADJACENT TRAVEL LANE. PROVIDE AND UTILIZE SPECIAL SIGN MOUNTING DEVICES AND HARDWARE AS NECESSARY FOR INSTALLING PERMANENT CONSTRUCTION SIGN ASSEMBLIES IN AREAS WHERE CONCRETE MEDIAN BARRIER WALLS, BRIDGE PARAPET WALLS OR DOUBLEFACED GUARDRAIL ARE PRESENT.
- MOUNT ALL FLAT SHEET PERMANENT CONSTRUCTION SIGNS STRAIGHT AND LEVEL AND WITH THE FACE OF THE SIGNS PERPENDICULAR TO THE SURFACE OF THE ROADWAY.
- REFLECTORIZE ALL ORANGE PERMANENT CONSTRUCTION SIGNS AND ANY ORANGE AREAS OF MULTICOLORED PERMANENT CONSTRUCTION SIGNS WITH A FLUORESCENT ORANGE COLORED PRISMATIC RETROREFLECTIVE SHEETING. REFLECTORIZE ALL WHITE PERMANENT CONSTRUCTION SIGNS AND ANY WHITE AREAS OF MULTICOLORED PERMANENT CONSTRUCTION SIGNS WITH A WHITE COLORED PRISMATIC RETROREFLECTIVE SHEETING.
- SPACINGS INDICATED ARE FOR NORMAL CONDITIONS; ADJUSTMENTS MAY BE REQUIRED DUE TO HORIZONTAL AND/OR VERTICAL ALIGNMENTS OR OTHER SIGHT DISTANCE RESTRICTIONS.
- ALL TRAFFIC CONTROL DEVICES SHALL REQUIRE APPROVAL BY THE DEPARTMENT. ONLY THOSE TRAFFIC CONTROL DEVICES INCLUDED ON THE "APPROVED PRODUCTS LIST FOR TRAFFIC CONTROL DEVICES IN WORK ZONES" ARE CONSIDERED ACCEPTABLE FOR USE. THIS LIST MAY BE ACCESSED ON THE DEPARTMENT'S WEB SITE AT: www.scdot.org.
- THE DEPARTMENT RESERVES THE RIGHT TO RESTRICT WORK OPERATIONS AND/OR WITHHOLD THE MONTHLY ESTIMATE IF THE TRAFFIC CONTROL IS NOT PROPERLY INSTALLED AND MAINTAINED AS DIRECTED BY THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, THE STANDARD DRAWINGS, THE PLANS AND/OR THE ENGINEER.
- WHEN WORK IS INACTIVE FOR 3 OR MORE CONSECUTIVE DAYS, COVER THE "WORK ZONE \$5000 MAX FINE" SIGN (G20-6-48) WITH AN OPAQUE MATERIAL IN ACCORDANCE WITH THE APPROVED METHODS FOR COVERING SIGNS AS SPECIFIED IN THE SPECIFICATIONS.

OWNER

Columbia Water

DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

PROJECT

30" FORCE MAIN RELOCATION UNDER I-20

REVISION

B	10/2024	90% DESIGN
A	08/2024	60% DESIGN
MARK	DATE	DESCRIPTION

HDR DRAWING INFORMATION

HDR PROJECT NUMBER 10207730

PROJECT MANAGER RAVEN GAMBRELL, PE

CIVIL ENGINEER JONATHAN EICHELBERGER, PE

DRAWN BY BECKY GENTRY, EIT

CORPORATE SEAL

SOUTH CAROLINA

HDR ENGINEERING, INC.

OF THE CAROLINAS

No. C0318

CERTIFICATE OF AUTHORIZATION

ENGINEER SEAL

PRELIMINARY

SCALE

SHEET NAME

CCR TC10 TRAFFIC CONTROL PLANS

SHEET NUMBER

03C-103 SHEET 10 OF 13

FOR INFORMATION ONLY



OWNER



DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

PROJECT

30" FORCE MAIN RELOCATION UNDER I-20

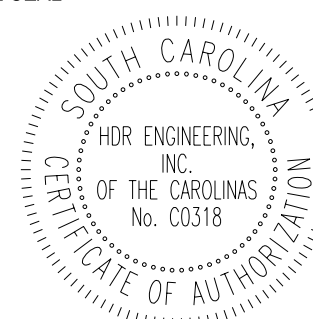
REVISION

B	10/2024	90% DESIGN
A	08/2024	60% DESIGN
MARK	DATE	DESCRIPTION

HDR DRAWING INFORMATION

HDR PROJECT NUMBER	10207730
PROJECT MANAGER	RAVEN GAMBRELL, PE
CIVIL ENGINEER	JONATHAN EICHELBERGER, PE
DRAWN BY	BECKY GENTRY, EIT

CORPORATE SEAL



ENGINEER SEAL

PRELIMINARY

SCALE

SHEET NAME

CCR
TC11
TRAFFIC CONTROL PLANS

SHEET NUMBER

03C-104
SHEET 11 OF 13

REFERENCES

WORK ZONE TRAFFIC CONTROL ENGINEER



Willie McConnell
SIGNATURE
8/2/12
DATE

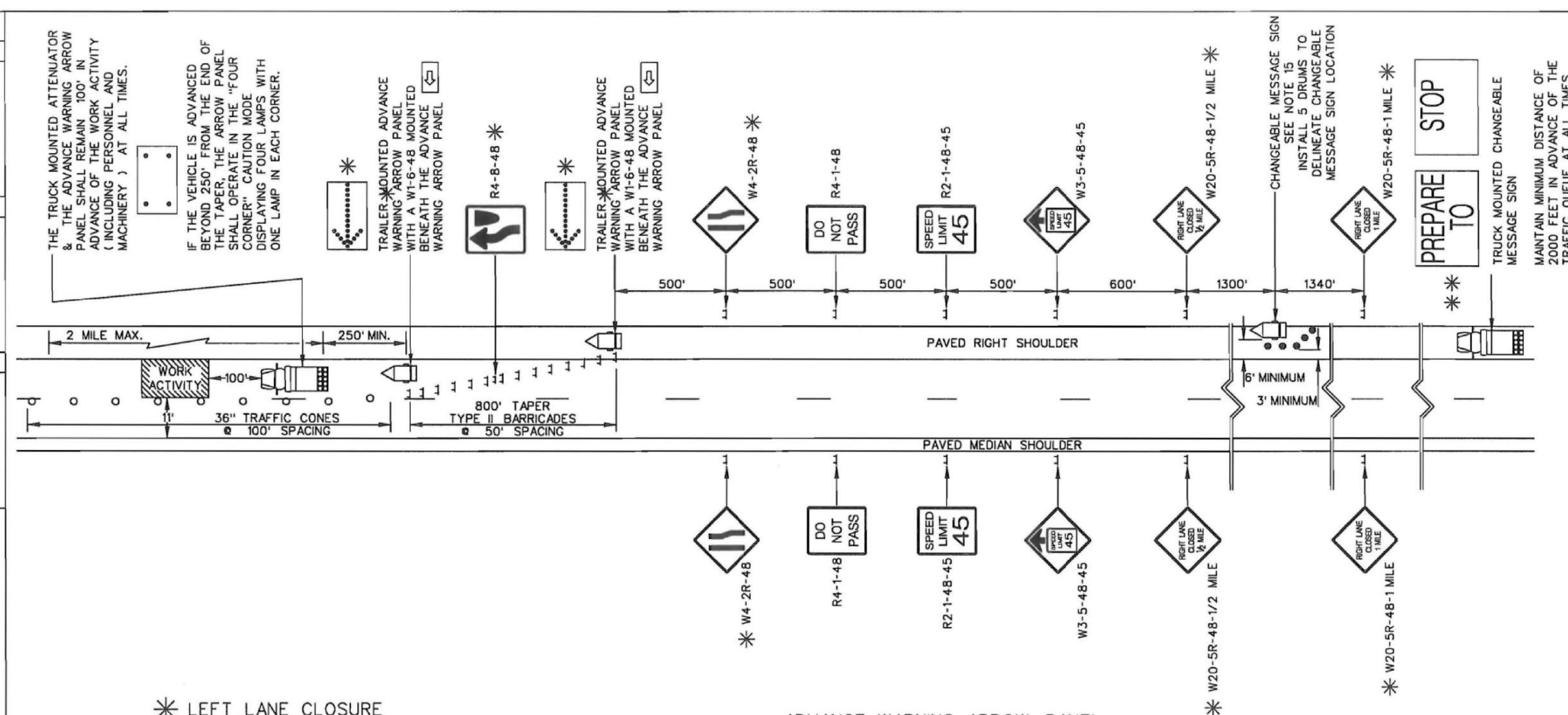
6			
5			
4			
3			
2	2-18-11	JCS	GENERAL UPDATE
1	3-06-09	JCS	TITLE / NOTE UPDATES
0	8-22-07	JCS	DRAWING NO. UPDATE
#	DATE	CHK	DESCRIPTION



STANDARD DRAWING

LANE CLOSURE DAYTIME MAINLINE COMPONENTS INTERSTATE ROUTES

610-105-01
EFFECTIVE LETTING DATE: JAN, 2013 THIS DRAWING IS NOT TO SCALE



* LEFT LANE CLOSURE

1. SIGNS ILLUSTRATED ARE FOR A RIGHT LANE CLOSURE.
2. WHEN CLOSING THE LEFT TRAVEL LANE, USE THE FOLLOWING:
2 - W20-5L-1/2 MILE 2 - W20-5L-48-1 MILE
2 - W4-2L-48 1 - R4-7-48
3. THE STRIPES ON THE BARRICADES TO THE LEFT OF TRAFFIC SHALL SLOPE DOWNWARD FROM THE UPPER LEFT TO THE LOWER RIGHT.
4. THE FLASHING ARROW AND THE "LARGE ARROW" SIGN (W1-6-48) SHALL POINT TO THE RIGHT.
5. THE CHANGEABLE MESSAGE SIGN SHALL FLASH ALTERNATELY TO READ "LEFT LANE CLOSED", "MERGE RIGHT".

ADVANCE WARNING ARROW PANEL

ALL ADVANCE WARNING ARROW PANELS SHALL BE 48" x 96" WITH A MINIMUM LEGIBILITY DISTANCE OF 1 MILE. PLACEMENT OF AN ADVANCE WARNING ARROW PANEL MAY REQUIRE ADJUSTMENTS DUE TO HORIZONTAL AND/OR VERTICAL ALIGNMENT OR OTHER SIGHT DISTANCE RESTRICTIONS. THE PANEL FACE SHALL BE NONREFLECTIVE BLACK. ALL ADVANCE WARNING ARROW PANELS SHALL COMPLY WITH THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION.

WHEN AN ADVANCE WARNING ARROW PANEL IS REQUIRED TO OPERATE IN THE CAUTION MODE, THE ADVANCE WARNING ARROW PANEL SHALL DISPLAY THE "FOUR CORNERS" CAUTION MODE, WITH ONE LAMP IN EACH CORNER. DISPLAY OF ANY OTHER TYPE OF CAUTION MODE OTHER THAN THE "FOUR CORNERS" CAUTION MODE SUCH AS THE "FLASHING BAR" OR THE "ALTERNATING DIAMOND" CAUTION MODES ARE UNACCEPTABLE AND PROHIBITED.

GENERAL NOTES

1. ALL SIGN LOCATIONS ARE TO BE MEASURED FROM THE WORK AREA. WORK LIMITS FOR THE PROJECT WILL BE DETERMINED BY THE ENGINEER AND AS INDICATED IN THE CONTRACT.
2. INSTALL ADVANCE WARNING SIGNS MOUNTED ON PORTABLE SIGN SUPPORTS NO LESS THAN 4 FEET FROM THE NEAR EDGE OF THE SIGN TO THE NEAR EDGE OF AN ADJACENT TRAVEL LANE ON ROADWAYS WITH EARTH SHOULDERS AND NO LESS THAN 6 FEET FROM THE NEAR EDGE OF THE SIGN TO THE NEAR EDGE OF AN ADJACENT TRAVEL LANE ON ROADWAYS WITH PAVED SHOULDERS. WHEN CURB & GUTTER IS PRESENT, INSTALL THE SIGN NO LESS THAN 2 FEET FROM THE NEAR EDGE OF THE SIGN TO THE FACE OF THE CURB.
3. SPACINGS INDICATED ARE FOR NORMAL CONDITIONS; ADJUSTMENTS MAY BE REQUIRED DUE TO HORIZONTAL AND/OR VERTICAL ALIGNMENTS OR OTHER SIGHT DISTANCE RESTRICTIONS.
4. ALL SIGNS MOUNTED ON PORTABLE SIGN SUPPORTS SHALL HAVE A MINIMUM MOUNTING HEIGHT OF 5 FEET FROM THE GROUND TO THE BOTTOM OF THE SIGN. ALL SIGNS MOUNTED ON GROUND MOUNTED U-CHANNEL POSTS OR SQUARE STEEL TUBE POSTS SHALL HAVE A MINIMUM MOUNTING HEIGHT OF 7 FEET FROM THE GRADE ELEVATION OF THE NEAR EDGE OF THE ADJACENT TRAVEL LANE TO THE BOTTOM OF THE SIGN UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT. MOUNT ALL SIGNS STRAIGHT AND LEVEL AND WITH THE FACE OF THE SIGNS PERPENDICULAR TO THE SURFACE OF THE ROADWAY.
5. REFLECTORIZE ORANGE ADVANCE WARNING SIGNS AND ANY ORANGE AREAS OF A MULTI-COLORED ADVANCE WARNING SIGN WITH A FLUORESCENT ORANGE COLORED PRISMATIC RETROREFLECTIVE SHEETING. REFLECTORIZE WHITE REGULATORY SIGNS AND ANY WHITE AREAS OF A MULTI-COLORED ADVANCE WARNING SIGN WITH A WHITE COLORED PRISMATIC RETROREFLECTIVE SHEETING.
6. ALL TRAFFIC CONTROL DEVICES SHALL COMPLY WITH ALL NCHRP REPORT 350 REQUIREMENTS AND SHALL REQUIRE APPROVAL BY THE DEPARTMENT. ONLY THOSE TRAFFIC CONTROL DEVICES INCLUDED ON THE "APPROVED PRODUCTS LIST FOR TRAFFIC CONTROL DEVICES IN WORK ZONES" ARE CONSIDERED ACCEPTABLE FOR USE. THIS LIST MAY BE ACCESSED ON THE DEPARTMENT'S WEB SITE AT: www.scdot.org.
7. THE CONTRACTOR SHALL PROVIDE AND UTILIZE ANY SPECIAL SIGN MOUNTING ASSEMBLIES AND HARDWARE THAT MAY BE NECESSARY FOR INSTALLING AND MOUNTING SIGNS IN AREAS OF CONCRETE MEDIAN BARRIER, BRIDGE PARAPET WALLS OR DOUBLED FACING GUARDRAIL.
8. REFLECTORIZING OF 36" TRAFFIC CONES USED DURING DAYLIGHT HOURS IS NOT REQUIRED. IF THIS TRAFFIC CONTROL SETUP EXTENDS INTO THE NIGHTTIME HOURS, REPLACE ALL 36" TRAFFIC CONES WITH EITHER PORTABLE PLASTIC DRUMS OR 42" OVERSIZED TRAFFIC CONES. REFLECTORIZE ALL PORTABLE PLASTIC DRUMS AND 42" OVERSIZED TRAFFIC CONES WITH TYPE III FLEXIBLE PRISMATIC RETROREFLECTIVE SHEETING UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT.
9. REFLECTORIZE ALL BARRICADES WITH A TYPE VIII OR IX PRISMATIC RETROREFLECTIVE SHEETING ON ALL PROJECTS LET TO CONTRACT AFTER MAY 1, 2012 UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT.
10. TYPE II BARRICADES SHALL HAVE A MINIMUM WIDTH OF 3 FEET UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT.
11. CONDUCT THE WORK IN SUCH A MANNER THAT WILL MINIMIZE ENCROACHMENT OF TRAFFIC CONTROL DEVICES, EQUIPMENT, PERSONNEL, MATERIALS OR ANY WORK RELATED VEHICLES ONTO AN ADJACENT TRAVEL LANE OPEN TO TRAFFIC. INSTALL, MAINTAIN AND ADJUST THE TRAFFIC CONTROL DEVICES AS NECESSARY TO ENSURE PROPER DELINEATION OF THE WORK AREA.
12. LANE CLOSURES ARE RESTRICTED TO MAXIMUM LENGTHS OF 2 MILES UNLESS OTHERWISE DIRECTED BY THE SPECIAL PROVISIONS AND/OR THE DEPARTMENT.
13. IF WORK IS BEING CONDUCTED SIMULTANEOUSLY AT TWO DIFFERENT LOCATIONS WITHIN THE SAME TRAVEL LANE UNDER TWO SEPARATE LANE CLOSURES ON AN INTERSTATE ROADWAY, SEPARATE THE TWO LANE CLOSURES BY NO LESS THAN 2 MILES FROM THE END OF THE FIRST CLOSURE THAT A MOTORIST WILL ENCOUNTER TO THE BEGINNING OF THE TAPER OF THE SECOND CLOSURE.
14. IF WORK IS BEING CONDUCTED SIMULTANEOUSLY AT TWO DIFFERENT LOCATIONS IN THE SAME DIRECTION BUT WITHIN DIFFERENT TRAVEL LANES UNDER TWO SEPARATE LANE CLOSURES ON AN INTERSTATE ROADWAY, SEPARATE THE TWO CLOSURES BY NO LESS THAN 4 MILES FROM THE END OF THE FIRST CLOSURE THAT A MOTORIST WILL ENCOUNTER TO THE BEGINNING OF THE TAPER OF THE SECOND CLOSURE.
15. A TRAILER MOUNTED CHANGEABLE MESSAGE SIGN IS REQUIRED FOR THIS TRAFFIC CONTROL SETUP FOR AN INTERSTATE LANE CLOSURE. INSTALL THE CHANGEABLE MESSAGE SIGN AS ILLUSTRATED ON THIS STANDARD DRAWING UNLESS OTHERWISE DIRECTED BY THE SPECIAL PROVISIONS, THE PLANS AND/OR THE ENGINEER. INSTALL THE CHANGEABLE MESSAGE SIGN NO LESS THAN 6 FEET FROM THE NEAR EDGE OF THE ADJACENT TRAVEL LANE AND SUPPLEMENT THE SIGN LOCATION WITH NO LESS THAN 5 PORTABLE PLASTIC DRUMS FOR DELINEATION AS ILLUSTRATED. 36" STANDARD TRAFFIC CONES OR 42" OVERSIZED TRAFFIC CONES ARE PROHIBITED AS SUBSTITUTES FOR THE PORTABLE PLASTIC DRUMS IN THIS APPLICATION. DURING A RIGHT LANE CLOSURE SETUP, THE SIGN SHOULD FLASH ALTERNATELY TO READ "RIGHT LANE CLOSED", "MERGE LEFT" AT A RATE THAT WILL PERMIT THE MOTORISTS TO READ BOTH MESSAGES AT LEAST ONCE.
16. THE DEPARTMENT RESERVES THE RIGHT TO RESTRICT WORK OPERATIONS AND/OR WITHHOLD THE MONTHLY ESTIMATE IF THE TRAFFIC CONTROL IS NOT PROPERLY INSTALLED AND MAINTAINED AS DIRECTED BY THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, THE STANDARD DRAWINGS, THE PLANS AND/OR THE ENGINEER.
17. THIS TYPICAL TRAFFIC CONTROL SETUP APPLIES TO THE INSTALLATION OF A LANE CLOSURE ON AN INTERSTATE ROADWAY WITH A POSTED REGULATORY SPEED LIMITED OF 55 MPH OR GREATER.

SEE STANDARD DRAWING NO. 610-105-02 FOR THE TRAFFIC CONTROL SETUPS FOR ENTRANCE AND EXIT RAMP DURING INTERSTATE LANE CLOSURES.

LANE CLOSURE LOCATION NOTE:

WHEN INSTALLING A LANE CLOSURE IN THE VICINITY OF AN INTERCHANGE, INSTALL THE LANE CLOSURE TO PROVIDE NO LESS THAN 500 FEET BETWEEN THE DOWNSTREAM END OF THE TAPER AREA OF THE LANE CLOSURE AND THE INITIAL RAMP ENCOUNTERED WITHIN THE INTERCHANGE.

** TRUCK MOUNTED CHANGEABLE MESSAGE SIGN ** PREPARE TO STOP NOTIFICATION

1. SUPPLEMENT EACH LANE CLOSURE THAT MAY GENERATE A TRAFFIC QUEUE WITH A TRUCK MOUNTED CHANGEABLE MESSAGE SIGN. THE SIGN SHALL PROVIDE ADVANCE NOTICE TO MOTORISTS TO BE PREPARED TO STOP DUE TO A TRAFFIC QUEUE.
2. PLACE A TRUCK MOUNTED CHANGEABLE MESSAGE SIGN, MANNED WITH AN OPERATOR AT ALL TIMES, ON THE SHOULDER OF THE ROADWAY IMMEDIATELY UPON DEVELOPMENT OF A TRAFFIC QUEUE. THE TRUCK MOUNTED CHANGEABLE MESSAGE SIGN SHALL REMAIN NO LESS THAN 2000 FEET IN ADVANCE OF THE TRAFFIC QUEUE AT ALL TIMES. PRESENCE OF THE TRUCK ON THE ROADWAY SHOULDER WITHOUT AN OPERATOR IS PROHIBITED AND SHALL INITIATE IMMEDIATE CESSATION OF WORK OPERATIONS THAT REQUIRE THE LANE CLOSURE.
3. A TRUCK MOUNTED ATTENUATOR IS NOT REQUIRED WHEN THE TRUCK MOUNTED CHANGEABLE MESSAGE SIGN IS MOUNTED ON A TRUCK WITH A GROSS VEHICULAR WEIGHT OF 5000 LBS. OR LESS. OTHERWISE, THE TRUCK SHALL HAVE THE CAPABILITY TO SUPPORT A TRUCK MOUNTED ATTENUATOR AND SHALL THEREFORE BE SUPPLEMENTED WITH A TRUCK MOUNTED ATTENUATOR.
4. PROVIDE, INSTALL AND MAINTAIN ALL TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS AS DIRECTED BY THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, THE STANDARD DRAWINGS, THE PLANS AND/OR THE ENGINEER.
5. THE DEPARTMENT PROHIBITS CONDUCTING WORK AND MAINTAINING A LANE CLOSURE THAT GENERATES A TRAFFIC QUEUE WITHOUT THE PRESENCE OF A TRUCK MOUNTED CHANGEABLE MESSAGE SIGN ON THE ROADWAY SHOULDER TO PROVIDE ADVANCE NOTICE TO MOTORISTS TO BE PREPARED TO STOP. THE DEPARTMENT SHALL INITIATE AN IMMEDIATE CESSATION OF WORK OPERATIONS TO PERMIT REMOVAL OF THE LANE CLOSURE IF A TRUCK MOUNTED CHANGEABLE MESSAGE SIGN IS NOT PROPERLY PLACED, MANNED AND OPERATING WHEN A TRAFFIC QUEUE DEVELOPS.

PORTABLE TRUCK MOUNTED ATTENUATOR

1. UTILIZE A TRUCK MOUNTED ATTENUATOR ATTACHED TO THE REAR OF A TRUCK WITH A MINIMUM GROSS VEHICULAR WEIGHT (GVW) OF 15,000 POUNDS (ACTUAL WEIGHT). IF THE ADDITION OF SUPPLEMENTAL WEIGHT TO THE VEHICLE AS BALLAST IS NECESSARY, CONTAIN THE MATERIAL WITHIN A STRUCTURE CONSTRUCTED OF STEEL. CONSTRUCT THIS STEEL STRUCTURE TO HAVE A MINIMUM OF FOUR SIDES AND A BOTTOM. A TOP IS OPTIONAL. BOLT THIS STRUCTURE TO THE FRAME OF THE TRUCK. UTILIZE A SUFFICIENT NUMBER OF FASTENERS FOR ATTACHMENT OF THE STEEL STRUCTURE TO THE FRAME OF THE TRUCK TO ENSURE THE STRUCTURE WILL NOT SEPARATE FROM THE FRAME OF THE TRUCK DURING AN IMPACT UPON THE ATTACHED TRUCK MOUNTED ATTENUATOR. UTILIZE EITHER DRY LOOSE SAND OR STEEL REINFORCED CONCRETE FOR BALLAST MATERIAL WITHIN THE STEEL STRUCTURE TO ACHIEVE THE NECESSARY WEIGHT. THE BALLAST MATERIAL SHALL REMAIN CONTAINED WITHIN THE CONFINES OF THE STEEL STRUCTURE AND SHALL NOT PROTRUDE FROM THE STEEL STRUCTURE IN ANY MANNER.
2. LOCATE THE TRUCK MOUNTED ATTENUATOR 100 FEET IN ADVANCE OF THE WORK AREA UNLESS OTHERWISE SPECIFIED.
3. PROVIDE, INSTALL AND MAINTAIN THE TRUCK MOUNTED ATTENUATOR AS SPECIFIED BY THE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.
4. DUE TO THE WEIGHT OF A TRUCK MOUNTED ATTENUATOR, THE TRUCK MOUNTED ATTENUATOR SUPPLEMENTED WITH AN ADVANCE WARNING ARROW PANEL MAY BE REPLACED WITH A TRAILER MOUNTED ADVANCE WARNING ARROW PANEL WHEN THIS TRAFFIC CONTROL SETUP IS UTILIZED FOR ASPHALT CONCRETE PAVEMENT OPERATIONS. REPLACEMENT WITH A TRAILER MOUNTED ADVANCE WARNING ARROW PANEL SHALL REQUIRE THE ENGINEER'S APPROVAL.

LEGEND

- 36" TRAFFIC CONES

OWNER

DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

PROJECT

30" FORCE MAIN
RELOCATION
UNDER I-20

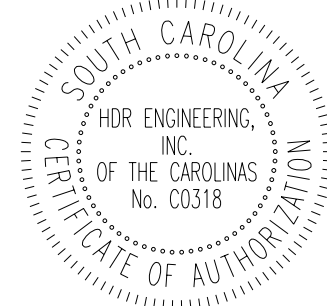
REVISION

B	10/2024	90% DESIGN
A	08/2024	60% DESIGN
MARK	DATE	DESCRIPTION

HDR DRAWING INFORMATION

HDR PROJECT NUMBER	10207730
PROJECT MANAGER	RAVEN GAMBRELL, PE
CIVIL ENGINEER	JONATHAN EICHELBERGER, PE
DRAWN BY	BECKY GENTRY, EIT

CORPORATE SEAL



ENGINEER SEAL

PRELIMINARY

SCALE

SHEET NAME

CCR
TC12
TRAFFIC CONTROL PLANS

SHEET NUMBER

03C-105
SHEET 12 OF 13

REFERENCES

WORK ZONE TRAFFIC
CONTROL ENGINEER

SIGNATURE

8/2/12
DATE

6			
5			
4			
3			
2	3-22-11	JCS	GENERAL UPDATE
1	3-10-09	JCS	TITLE / NOTE UPDATE
0	8-09-07	JCS	DRAWING NO. UPDATE
#	DATE	CHK	DESCRIPTION

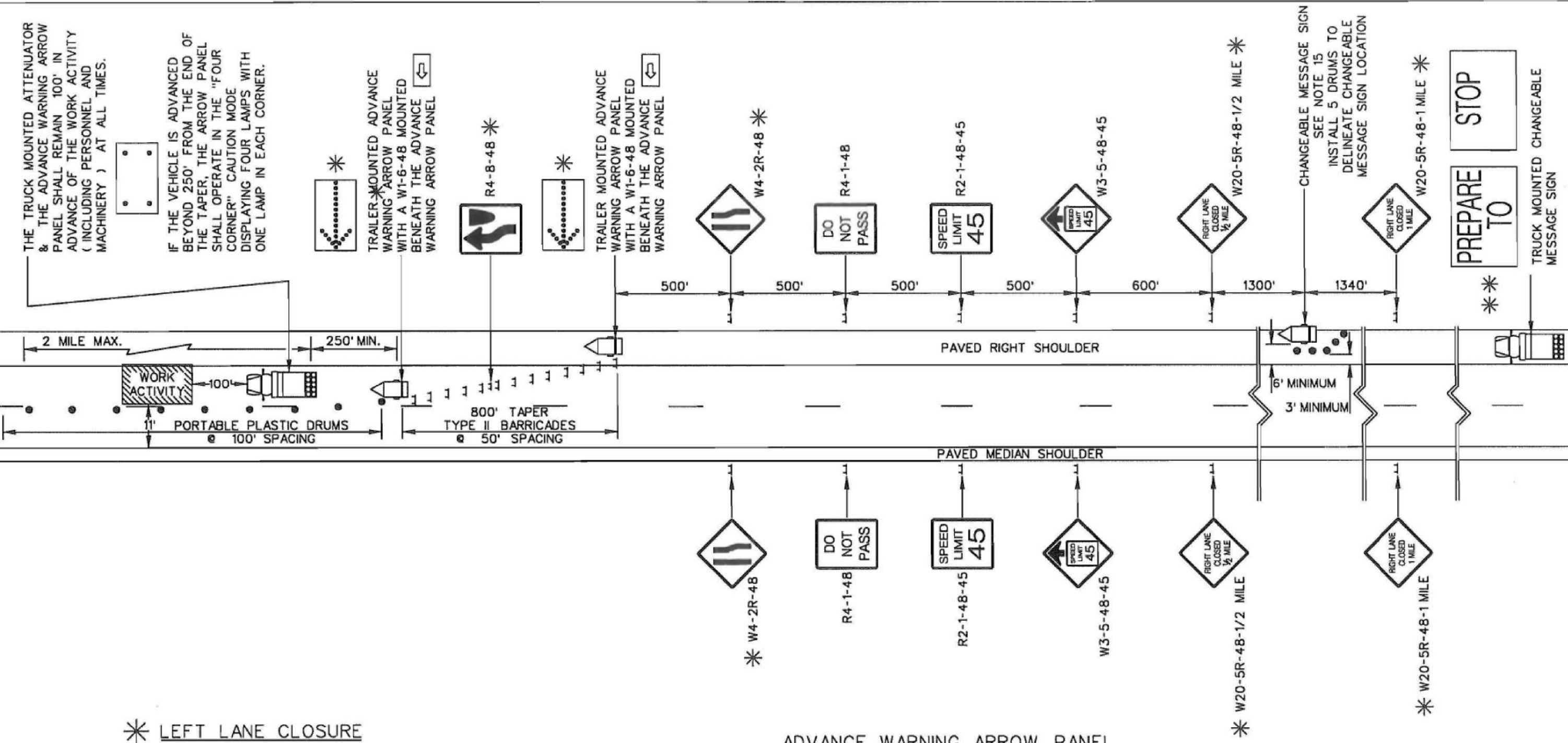


STANDARD DRAWING

LANE CLOSURE
NIGHTTIME
MAINLINE
COMPONENTS
INTERSTATE ROUTES

610-110-01

EFFECTIVE LETTING DATE: JAN, 2013



* LEFT LANE CLOSURE

- SIGNS ILLUSTRATED ARE FOR A RIGHT LANE CLOSURE.
- WHEN CLOSING THE LEFT TRAVEL LANE, USE THE FOLLOWING:
2 - W20-5L-1/2 MILE 2 - W20-5L-4B-1 MILE
2 - W4-2L-4B 1 - R4-7-4B
- THE STRIPES ON THE BARRICADES TO THE LEFT OF TRAFFIC SHALL SLOPE DOWNWARD FROM THE UPPER LEFT TO THE LOWER RIGHT.
- THE FLASHING ARROW AND THE "LARGE ARROW" SIGN (W1-6-4B) SHALL POINT TO THE RIGHT.
- THE CHANGEABLE MESSAGE SIGN SHALL FLASH ALTERNATELY TO READ "LEFT LANE CLOSED", "MERGE RIGHT".

ADVANCE WARNING ARROW PANEL

ALL ADVANCE WARNING ARROW PANELS SHALL BE 48" x 96" WITH A MINIMUM LEGIBILITY DISTANCE OF 1 MILE. PLACEMENT OF AN ADVANCE WARNING ARROW PANEL MAY REQUIRE ADJUSTMENTS DUE TO HORIZONTAL AND/OR VERTICAL ALIGNMENT OR OTHER SIGHT DISTANCE RESTRICTIONS. THE PANEL FACE SHALL BE NONREFLECTIVE BLACK. ALL ADVANCE WARNING ARROW PANELS SHALL COMPLY WITH THE STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION.

WHEN AN ADVANCE WARNING ARROW PANEL IS REQUIRED TO OPERATE IN THE CAUTION MODE, THE ADVANCE WARNING ARROW PANEL SHALL DISPLAY THE "FOUR CORNERS" CAUTION MODE, WITH ONE LAMP IN EACH CORNER. DISPLAY OF ANY OTHER TYPE OF CAUTION MODE OTHER THAN THE "FOUR CORNERS" CAUTION MODE SUCH AS THE "FLASHING BAR" OR THE "ALTERNATING DIAMOND" CAUTION MODES ARE UNACCEPTABLE AND PROHIBITED.

GENERAL NOTES

- ALL SIGN LOCATIONS ARE TO BE MEASURED FROM THE WORK AREA. WORK LIMITS FOR THE PROJECT WILL BE DETERMINED BY THE ENGINEER AND AS INDICATED IN THE CONTRACT.
- INSTALL ADVANCE WARNING SIGNS MOUNTED ON PORTABLE SIGN SUPPORTS NO LESS THAN 4 FEET FROM THE NEAR EDGE OF THE SIGN TO THE NEAR EDGE OF AN ADJACENT TRAVEL LANE ON ROADWAYS WITH EARTH SHOULDERS AND NO LESS THAN 6 FEET FROM THE NEAR EDGE OF THE SIGN TO THE NEAR EDGE OF AN ADJACENT TRAVEL LANE ON ROADWAYS WITH PAVED SHOULDERS. WHEN CURB & GUTTER IS PRESENT, INSTALL THE SIGN NO LESS THAN 2 FEET FROM THE NEAR EDGE OF THE SIGN TO THE FACE OF THE CURB.
- SPACINGS INDICATED ARE FOR NORMAL CONDITIONS; ADJUSTMENTS MAY BE REQUIRED DUE TO HORIZONTAL AND/OR VERTICAL ALIGNMENTS OR OTHER SIGHT DISTANCE RESTRICTIONS.
- ALL SIGNS MOUNTED ON PORTABLE SIGN SUPPORTS SHALL HAVE A MINIMUM MOUNTING HEIGHT OF 5 FEET FROM THE GROUND TO THE BOTTOM OF THE SIGN. ALL SIGNS MOUNTED ON GROUND MOUNTED U-CHANNEL POSTS OR SQUARE STEEL TUBE POSTS SHALL HAVE A MINIMUM MOUNTING HEIGHT OF 7 FEET FROM THE GRADE ELEVATION OF THE NEAR EDGE OF THE ADJACENT TRAVEL LANE TO THE BOTTOM OF THE SIGN UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT. MOUNT ALL SIGNS STRAIGHT AND LEVEL AND WITH THE FACE OF THE SIGNS PERPENDICULAR TO THE SURFACE OF THE ROADWAY.
- REFLECTORIZE ORANGE ADVANCE WARNING SIGNS AND ANY ORANGE AREAS OF A MULTI-COLORED ADVANCE WARNING SIGN WITH A FLUORESCENT ORANGE COLORED PRISMATIC RETROREFLECTIVE SHEETING. REFLECTORIZE WHITE REGULATORY SIGNS AND ANY WHITE AREAS OF A MULTI-COLORED ADVANCE WARNING SIGN WITH A WHITE COLORED PRISMATIC RETROREFLECTIVE SHEETING.
- ALL TRAFFIC CONTROL DEVICES SHALL COMPLY WITH ALL NCHRP REPORT 350 REQUIREMENTS AND SHALL REQUIRE APPROVAL BY THE DEPARTMENT. ONLY THOSE TRAFFIC CONTROL DEVICES INCLUDED ON THE "APPROVED PRODUCTS LIST FOR TRAFFIC CONTROL DEVICES IN WORK ZONES" ARE CONSIDERED ACCEPTABLE FOR USE. THIS LIST MAY BE ACCESSED ON THE DEPARTMENT'S WEB SITE AT: www.scdot.org.
- THE CONTRACTOR SHALL PROVIDE AND UTILIZE ANY SPECIAL SIGN MOUNTING ASSEMBLIES AND HARDWARE THAT MAY BE NECESSARY FOR INSTALLING AND MOUNTING SIGNS IN AREAS OF CONCRETE MEDIAN BARRIER, BRIDGE PARAPET WALLS OR DOUBLEFACED GUARDRAIL.
- REFLECTORIZATION OF 36" TRAFFIC CONES USED DURING DAYLIGHT HOURS IS NOT REQUIRED. IF THIS TRAFFIC CONTROL SETUP EXTENDS INTO THE NIGHTTIME HOURS, REPLACE ALL 36" TRAFFIC CONES WITH EITHER PORTABLE PLASTIC DRUMS OR 42" OVERSIZED TRAFFIC CONES. REFLECTORIZE ALL PORTABLE PLASTIC DRUMS AND 42" OVERSIZED TRAFFIC CONES WITH TYPE III FLEXIBLE PRISMATIC RETROREFLECTIVE SHEETING UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT.
- REFLECTORIZE ALL BARRICADES WITH A TYPE VII OR IX PRISMATIC RETROREFLECTIVE SHEETING ON ALL PROJECTS LET TO CONTRACT AFTER MAY 1, 2012 UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT.
- THIS DRAWING IS NOT TO SCALE.
- TYPE II BARRICADES SHALL HAVE A MINIMUM WIDTH OF 3 FEET UNLESS OTHERWISE DIRECTED BY THE DEPARTMENT.
- CONDUCT THE WORK IN SUCH A MANNER THAT WILL MINIMIZE ENCROACHMENT OF TRAFFIC CONTROL DEVICES, EQUIPMENT, PERSONNEL, MATERIALS OR ANY WORK RELATED VEHICLES ONTO AN ADJACENT TRAVEL LANE OPEN TO TRAFFIC. INSTALL, MAINTAIN AND ADJUST THE TRAFFIC CONTROL DEVICES AS NECESSARY TO ENSURE PROPER DELINEATION OF THE WORK AREA.
- LANE CLOSURES ARE RESTRICTED TO MAXIMUM LENGTHS OF 2 MILES UNLESS OTHERWISE DIRECTED BY THE SPECIAL PROVISIONS AND/OR THE DEPARTMENT.
- IF WORK IS BEING CONDUCTED SIMULTANEOUSLY AT TWO DIFFERENT LOCATIONS WITHIN THE SAME TRAVEL LANE UNDER TWO SEPARATE LANE CLOSURES ON AN INTERSTATE ROADWAY, SEPARATE THE TWO LANE CLOSURES BY NO LESS THAN 2 MILES FROM THE END OF THE FIRST CLOSURE THAT A MOTORIST WILL ENCOUNTER TO THE BEGINNING OF THE TAPER OF THE SECOND CLOSURE.
- IF WORK IS BEING CONDUCTED SIMULTANEOUSLY AT TWO DIFFERENT LOCATIONS IN THE SAME DIRECTION BUT WITHIN DIFFERENT TRAVEL LANES UNDER TWO SEPARATE LANE CLOSURES ON AN INTERSTATE ROADWAY, SEPARATE THE TWO CLOSURES BY NO LESS THAN 4 MILES FROM THE END OF THE FIRST CLOSURE THAT A MOTORIST WILL ENCOUNTER TO THE BEGINNING OF THE TAPER OF THE SECOND CLOSURE.
- A TRAILER MOUNTED CHANGEABLE MESSAGE SIGN IS REQUIRED FOR THIS TRAFFIC CONTROL SETUP FOR AN INTERSTATE LANE CLOSURE. INSTALL THE CHANGEABLE MESSAGE SIGN AS ILLUSTRATED ON THIS STANDARD DRAWING UNLESS OTHERWISE DIRECTED BY THE SPECIAL PROVISIONS, THE PLANS AND/OR THE ENGINEER. INSTALL THE CHANGEABLE MESSAGE SIGN NO LESS THAN 6 FEET FROM THE NEAR EDGE OF THE ADJACENT TRAVEL LANE AND SUPPLEMENT THE SIGN LOCATION WITH NO LESS THAN 5 PORTABLE PLASTIC DRUMS FOR DELINEATION AS ILLUSTRATED. 36" STANDARD TRAFFIC CONES OR 42" OVERSIZED TRAFFIC CONES ARE PROHIBITED AS SUBSTITUTES FOR THE PORTABLE PLASTIC DRUMS IN THIS APPLICATION. DURING A RIGHT LANE CLOSURE SETUP, THE SIGN SHOULD FLASH ALTERNATELY TO READ "RIGHT LANE CLOSED", "MERGE LEFT" AT A RATE THAT WILL PERMIT THE MOTORISTS TO READ BOTH MESSAGES AT LEAST ONCE.
- THE DEPARTMENT RESERVES THE RIGHT TO RESTRICT WORK OPERATIONS AND/OR WITHHOLD THE MONTHLY ESTIMATE IF THE TRAFFIC CONTROL IS NOT PROPERLY INSTALLED AND MAINTAINED AS DIRECTED BY THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, THE STANDARD DRAWINGS, THE PLANS AND/OR THE ENGINEER.
- THIS TYPICAL TRAFFIC CONTROL SETUP APPLIES TO THE INSTALLATION OF A LANE CLOSURE ON AN INTERSTATE ROADWAY WITH A POSTED REGULATORY SPEED LIMITED OF 55 MPH OR GREATER.

SEE STANDARD DRAWING NO. 610-110-02 FOR THE TRAFFIC CONTROL SETUPS FOR ENTRANCE AND EXIT RAMP DURING INTERSTATE LANE CLOSURES.

LANE CLOSURE LOCATION NOTE:

WHEN INSTALLING A LANE CLOSURE IN THE VICINITY OF AN INTERCHANGE, INSTALL THE LANE CLOSURE TO PROVIDE NO LESS THAN 500 FEET BETWEEN THE DOWNSTREAM END OF THE TAPER AREA OF THE LANE CLOSURE AND THE INITIAL RAMP ENCOUNTERED WITHIN THE INTERCHANGE.

** TRUCK MOUNTED CHANGEABLE MESSAGE SIGN **
PREPARE TO STOP NOTIFICATION

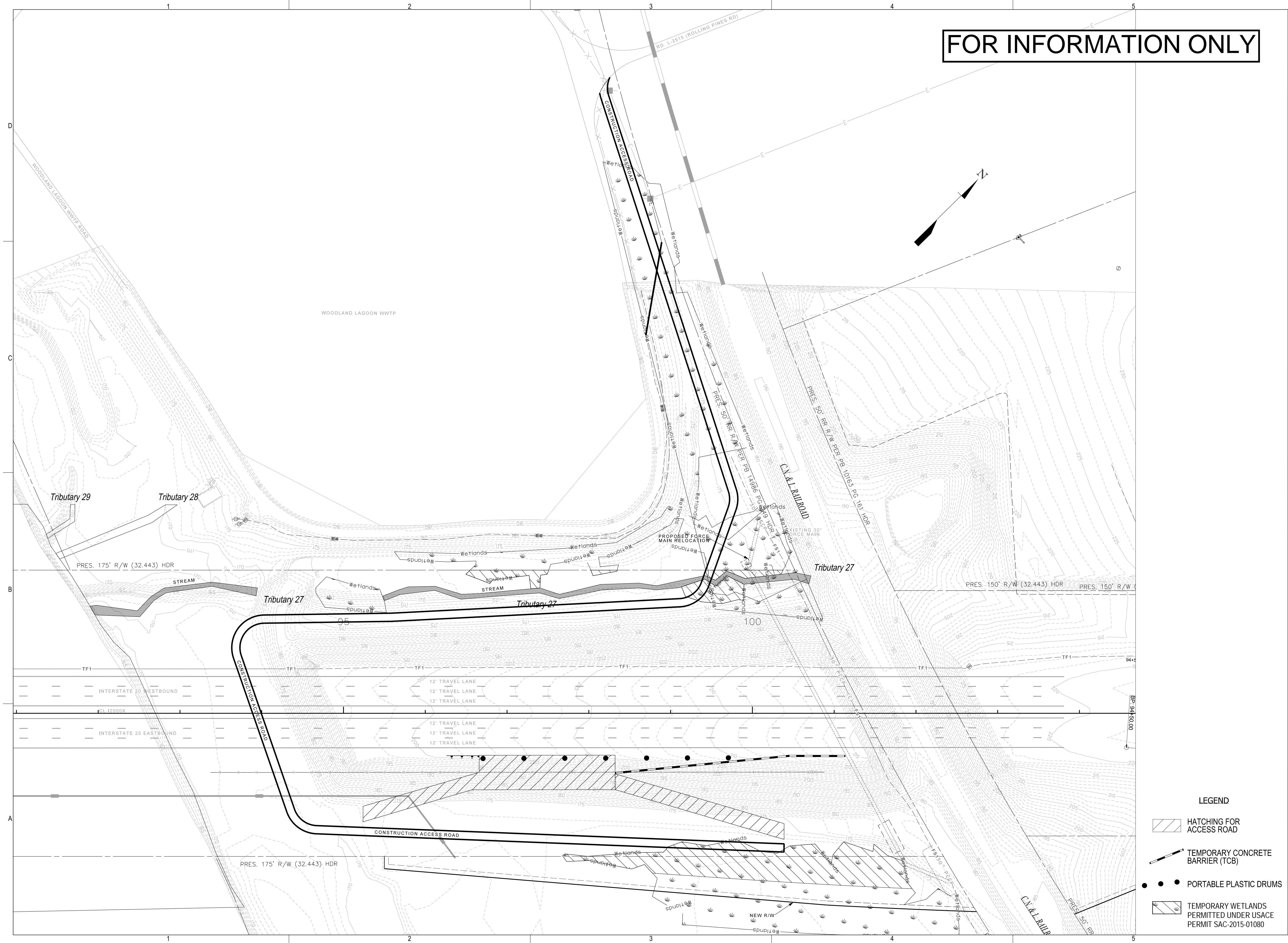
- SUPPLEMENT EACH LANE CLOSURE THAT MAY GENERATE A TRAFFIC QUEUE WITH A TRUCK MOUNTED CHANGEABLE MESSAGE SIGN. THE SIGN SHALL PROVIDE ADVANCE NOTICE TO MOTORISTS TO BE PREPARED TO STOP DUE TO A TRAFFIC QUEUE.
- PLACE A TRUCK MOUNTED CHANGEABLE MESSAGE SIGN, MANNED WITH AN OPERATOR AT ALL TIMES, ON THE SHOULDER OF THE ROADWAY IMMEDIATELY UPON DEVELOPMENT OF A TRAFFIC QUEUE. THE TRUCK MOUNTED CHANGEABLE MESSAGE SIGN SHALL REMAIN NO LESS THAN 2000 FEET IN ADVANCE OF THE TRAFFIC QUEUE AT ALL TIMES. PRESENCE OF THE TRUCK ON THE ROADWAY SHOULDER WITHOUT AN OPERATOR IS PROHIBITED AND SHALL INITIATE IMMEDIATE CESSATION OF WORK OPERATIONS THAT REQUIRE THE LANE CLOSURE.
- A TRUCK MOUNTED ATTENUATOR IS NOT REQUIRED WHEN THE TRUCK MOUNTED CHANGEABLE MESSAGE SIGN IS MOUNTED ON A TRUCK WITH A GROSS VEHICULAR WEIGHT OF 5000 LBS. OR LESS. OTHERWISE, THE TRUCK SHALL HAVE THE CAPABILITY TO SUPPORT A TRUCK MOUNTED ATTENUATOR AND SHALL THEREFORE BE SUPPLEMENTED WITH A TRUCK MOUNTED ATTENUATOR.
- PROVIDE, INSTALL AND MAINTAIN ALL TRUCK MOUNTED CHANGEABLE MESSAGE SIGNS AS DIRECTED BY THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, THE STANDARD DRAWINGS, THE PLANS AND/OR THE ENGINEER.
- THE DEPARTMENT PROHIBITS CONDUCTING WORK AND MAINTAINING A LANE CLOSURE THAT GENERATES A TRAFFIC QUEUE WITHOUT THE PRESENCE OF A TRUCK MOUNTED CHANGEABLE MESSAGE SIGN ON THE ROADWAY SHOULDER TO PROVIDE ADVANCE NOTICE TO MOTORISTS TO BE PREPARED TO STOP. THE DEPARTMENT SHALL INITIATE AN IMMEDIATE CESSATION OF WORK OPERATIONS TO PERMIT REMOVAL OF THE LANE CLOSURE IF A TRUCK MOUNTED CHANGEABLE MESSAGE SIGN IS NOT PROPERLY PLACED, MANNED AND OPERATING WHEN A TRAFFIC QUEUE DEVELOPS.

PORTABLE TRUCK MOUNTED ATTENUATOR

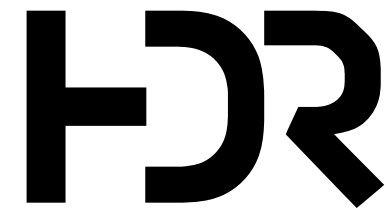
- UTILIZE A TRUCK MOUNTED ATTENUATOR ATTACHED TO THE REAR OF A TRUCK WITH A MINIMUM GROSS VEHICULAR WEIGHT (GVW) OF 15,000 POUNDS (ACTUAL WEIGHT). IF THE ADDITION OF SUPPLEMENTAL WEIGHT TO THE VEHICLE AS BALLAST IS NECESSARY, CONTAIN THE MATERIAL WITHIN A STRUCTURE CONSTRUCTED OF STEEL. CONSTRUCT THIS STEEL STRUCTURE TO HAVE A MINIMUM OF FOUR SIDES AND A BOTTOM. A TOP IS OPTIONAL. BOLT THIS STRUCTURE TO THE FRAME OF THE TRUCK. UTILIZE A SUFFICIENT NUMBER OF FASTENERS FOR ATTACHMENT OF THE STEEL STRUCTURE TO THE FRAME OF THE TRUCK TO ENSURE THE STRUCTURE WILL NOT SEPARATE FROM THE FRAME OF THE TRUCK DURING AN IMPACT UPON THE ATTACHED TRUCK MOUNTED ATTENUATOR. UTILIZE EITHER DRY LOOSE SAND OR STEEL REINFORCED CONCRETE FOR BALLAST MATERIAL WITHIN THE STEEL STRUCTURE TO ACHIEVE THE NECESSARY WEIGHT. THE BALLAST MATERIAL SHALL REMAIN CONTAINED WITHIN THE CONFINES OF THE STEEL STRUCTURE AND SHALL NOT PROTRUDE FROM THE STEEL STRUCTURE IN ANY MANNER.
- LOCATE THE TRUCK MOUNTED ATTENUATOR 100 FEET IN ADVANCE OF THE WORK AREA UNLESS OTHERWISE SPECIFIED.
- PROVIDE, INSTALL AND MAINTAIN THE TRUCK MOUNTED ATTENUATOR AS SPECIFIED BY THE STANDARD SPECIFICATIONS AND AS DIRECTED BY THE ENGINEER.
- DUE TO THE WEIGHT OF A TRUCK MOUNTED ATTENUATOR, THE TRUCK MOUNTED ATTENUATOR SUPPLEMENTED WITH AN ADVANCE WARNING ARROW PANEL MAY BE REPLACED WITH A TRAILER MOUNTED ADVANCE WARNING ARROW PANEL WHEN THIS TRAFFIC CONTROL SETUP IS UTILIZED FOR ASPHALT CONCRETE PAVEMENT OPERATIONS. REPLACEMENT WITH A TRAILER MOUNTED ADVANCE WARNING ARROW PANEL SHALL REQUIRE THE ENGINEER'S APPROVAL.

LEGEND

- PORTABLE PLASTIC DRUMS



FOR INFORMATION ONLY



OWNER

Columbia Water

DEPARTMENT OF ENGINEERING
P.O. BOX 147
COLUMBIA SOUTH CAROLINA 29217

PROJECT

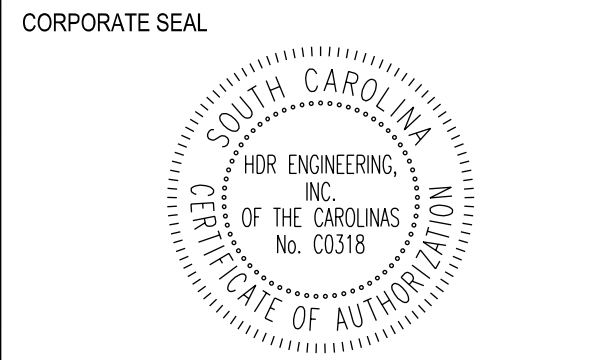
**30" FORCE MAIN
RELOCATION
UNDER I-20**

REVISION

B	10/2024	90% DESIGN
A	08/2024	60% DESIGN
MARK	DATE	DESCRIPTION

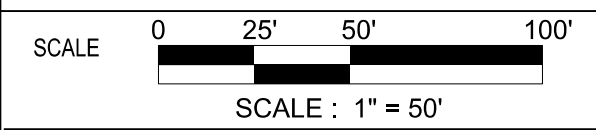
HDR DRAWING INFORMATION

HDR PROJECT NUMBER	10207730
PROJECT MANAGER	RAVEN GAMBRELL, PE
CIVIL ENGINEER	JONATHAN EICHELBERGER, PE
DRAWN BY	BECKY GENTRY, EIT



ENGINEER SEAL

PRELIMINARY



SHEET NAME

**CCR
TC13
TRAFFIC CONTROL PLANS**

SHEET NUMBER

**03C-106
SHEET 13 OF 13**

- LEGEND
- HATCHING FOR ACCESS ROAD
 - TEMPORARY CONCRETE BARRIER (TCB)
 - PORTABLE PLASTIC DRUMS
 - TEMPORARY WETLANDS PERMITTED UNDER USACE PERMIT SAC-2015-01080